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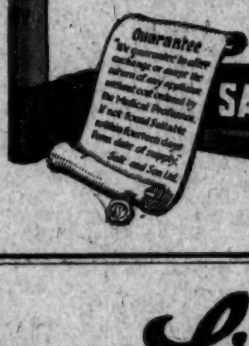

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BRITISH MEDICAL JOURNAL

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THIOURACIL IN TOXIC GOITRE

A REVIEW OF FOUR YEARS' EXPERIENCE

BY

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The widespread clinical trial of thiouracil and its derivatives in toxic goitre since 1943 has shown that they are very effective in reducing the excessive thyroid secretion of this condition. A partial answer can now be given to those questions which naturally arose as to the value of these antithyroid drugs compared with other methods of treatment. The first question was whether or not thyroid function would remain normal after the drug was discontinued, and how long it would be necessary to give the drug before it could be discontinued. Equally important were the nature and the frequency of toxic effects and how, if at all, they were to be avoided. Thirdly, were there any particular age groups or clinical types for which thiouracil was especially suitable or contraindicated? The answers to these problems would of course decide the place of thiouracil in relation to other methods of treatment, thyroidectomy in particular.

With regard to remissions, Beierwaltes and Sturgis (1946a) noted eight in 45 cases; the course of thiouracil had averaged 10½ months in the eight cases, and the duration of the remission (to date) was from 3 to 12 months. Their cases of nodular goitre were not treated by thiouracil but by thyroidectomy. Himsworth *et. al.* (1947) noted 25 remissions in a total of 65 treated, lasting from 6 to 30 months and over; only two had not relapsed after a remission of 18 months or more. Nussey (1946) reported 16 patients out of 50 with remissions of 5 to 17 months, and Wilson (1946) had two patients in a series of 65 who had not relapsed after stopping thiouracil for over a year. Williams *et al.* (1947) gave details of 111 patients who had stopped thiouracil. Of these, 51 had remissions lasting from 3 to 31 months—44 for over a year and 33 for more than 18 months; of all their patients who remained well for more than a year without treatment only one had a relapse. It would appear that this series of 111 cases is about one-third of the total number of their thiouracil-treated patients.

With regard to the length of treatment, Himsworth *et al.* (1947) concluded that prolonged treatment (a year or more) was less likely to be followed by relapse than when it was short—that is, less than one year—but the cases reported by Nussey (1946) showed a longer average remission with treatment for less than six months than when it had exceeded this time. The 111 patients of Williams *et al.* (1947) received thiouracil for an average of 10 months: they did not find a close relation between the length of treatment and the length of remission.

Toxic effects occurred in about 13% in the survey of Van Winkle *et al.* (1946) covering nearly 6,000 cases. This figure is based on collected results from a large number of observers and has not the same value as personal observation. It includes many cases of leucopenia which was diagnosed when the total white count was less than 4,000, and some of these may have been normal counts for the individuals concerned. Drug fever in this series had an incidence of 2.7%; in Moore's (1946) collected cases this was about 5%. The incidence of agranulocytosis (granulocytopenia) in these two series was a little over 2% and the mortality about 0.5%. From these inquiries it did not seem that the higher doses of thiouracil were more likely to cause agranulocytosis, but the range of dosage was higher than that generally used to-day. Some skin eruptions are not infrequent, but apart from urticaria they do not usually require the permanent stoppage of the drug. The above are the common and important reactions, though there are others of less significance. Many diverse and almost solitary conditions have been reported as complications of thiouracil, not always with proof that they are not intercurrent and unconnected with the drug. So far as is known at present thiouracil and its methyl derivative are the least toxic antithyroid drugs (Morgans, 1947). Propyl thiouracil may be better, but so far there is no proof. Ergothioneine (Lawson and Rimington, 1947) is under trial.

The applicability of thiouracil to different types has to be considered. Some authors have suggested that it is less effective when the thyrotoxicosis is secondary and the goitre is nodular than when it is smooth (Grainger, Gregson, and Pemberton, 1945). There is really no sharp differentiation between these two types, one merging insensibly into the other as the goitre increases in age. The goitre which is quite smooth is relatively rare, and the great majority are more or less nodular. On the other hand, Williams *et al.* (1947) had results equally good in nodular goitres, and indirect evidence on this point is the ability of thiouracil to stop auricular fibrillation and restore normal rhythm, this arrhythmia occurring usually in the older patients with nodular goitres (Nussey, 1944; Cookson, 1945; Williams, 1946; Himsworth *et al.*, 1947; Wilson, 1946; Wilson and Goodwin, 1947). Neither iodine nor external *x*-ray treatment will accomplish this, and it has yet to be shown what radioactive iodine will do in this respect. In pregnancy resistance to thiouracil has been reported (Cookson, 1945), and it has been recorded that thiouracil may cause goitre in

the foetus (Davis and Forbes, 1945). But it has been used successfully without detriment to the foetus (Eaton, 1945; Strouse and Drabkin, 1946; Davis and Forbes, 1945; Williams *et al.*, 1947).

When the goitre is very large or when it is producing symptoms of tracheal pressure it is generally considered that removal is indicated rather than thiouracil.

In children thiouracil might be very suitable for the treatment of toxic goitre as it is difficult to estimate the amount of thyroid tissue to leave when doing thyroidectomy. Enough must be left to meet the needs of a growing child, yet not so much as to cause persistence of hyperthyroidism. With thiouracil it should be possible to adjust the dose to meet these requirements. Beierwaltes and Sturgis (1946b) used thiouracil in the case of a 14-year-old girl and would appear to have obtained a satisfactory result in that her B.M.R. was reduced from +61% to −3%.

Results of Thiouracil Administration

Our results of the treatment of 95 cases of toxic goitre with thiouracil or methyl thiouracil are based on observations extending from 1943 to 1947. The age and sex distribution and the numbers of smooth and nodular goitres are shown in Table I. Men accounted for only five of the

TABLE I.—*Age and Sex Distribution*

Age	Female	Male	Smooth Goitre	Nodular Goitre
15–19 ..	2	—	2	—
20–29 ..	9	—	4	5
30–39 ..	15	1	1	15
40–49 ..	23	1	3	21
50–59 ..	20	1	—	21
60–69 ..	16	1	—	17
70–79 ..	4	1	—	5
81 ..	1	—	—	1

cases and there were only 10 goitres which could be described as smooth. Three of the patients had hyperthyroidism, with goitre and ocular signs, after taking thyroid extract, which in two had been prescribed for obesity. Thyroidectomy had previously been carried out in seven at intervals of from 6 to 26 years before, and one other had had *x*-ray therapy. In eight patients, after having a course of thiouracil, thyroidectomy was done for a variety of reasons. These reasons were: toxic reaction to the drug (granulopenia) in one, tracheal pressure in two, haematoma of the thyroid in one (possibly a thiouracil effect), one with a large goitre which did not respond to thiouracil, and three chose to have operation though their response to thiouracil had been good. Death from various causes occurred in 10 cases: three from thyroid toxaemia, with heart failure, respiratory infections, and mental symptoms, within eight weeks of starting thiouracil; one after cerebral thrombosis; one from coronary thrombosis; two ambulant cases with auricular fibrillation died suddenly; one developed mental symptoms and went into coma; one died probably from agranulocytosis; and one from recurrent heart failure after showing a good response for six months.

The initial dosage of the drugs used in the first year or two of the period of investigation was 1 g. to 0.6 g. daily, but this has gradually been reduced and the initial dose is now nearly always 0.1 g. three times daily and never exceeds 0.1 g. four times daily. Once hyperthyroidism has been controlled a maintenance dose of from 0.059 g. daily to 0.1 g. thrice daily is used—generally 0.1 g. daily. Resistance to thiouracil—that is, persistence of hyperthyroidism after several weeks' or months' treatment—was noted in six cases: three with very large goitres, estimated at 10 or more times the normal in size; a case of pregnancy; a woman aged 81 with auricular fibrillation and congestive heart failure; and one case in which hyperthyroidism persisted after the administration of thyroid extract.

The periods of observation and treatment were as follows: less than 6 months, 39 cases; 6 to 12 months, 19 cases; 1 to 2 years, 17 cases; 2 to 3 years, 16 cases; over 3 years, 6 cases. In 40 patients there were remissions or periods with no signs or symptoms of hyperthyroidism and during which no thiouracil was given (Table II). In cases

TABLE II.—*Remissions*

Duration	No.	Smooth Goitre	Nodular Goitre
2– 3 months	8	1	7
3– 6 „	13	2	11
6–12 „	8	1	7
12–18 „	7	4	3
18–24 „	1	—	1
2 years or more ..	3	1	2

where more than one remission has occurred only the longest is considered. These remissions lasted from 2 to 25 months. Relapses have occurred in 15. Of 10 patients with smooth goitres, whose average age was 29, eight had remissions lasting from 6 to 25 months, and of the two remaining one has relapsed and the other was treated by thyroidectomy after thiouracil had produced toxic effects. The 85 patients with nodular goitre, having an average age of 51, showed 31 remissions—6 (7%) of more than 1 year and 13 (14%) of more than 6 months. Of the 31 cases 14 have relapsed. Two are in excellent health, having taken no thiouracil for 2 years or more. There was no proportional relation between the occurrence or length of remissions and the duration of treatment. In 11 cases with remissions of 12 months or longer the duration of treatment averaged 8 months, with extremes of 4 and 18 months. In 29 cases with remissions lasting less than 12 months the average duration of treatment was 8 months, with extremes of 2 and 25 months. During remissions the goitre has usually decreased in size and in three cases has even become impalpable. Temporary enlargement sometimes occurs early in treatment, but reduction in the dose of thiouracil relieved this. An adequate dose could be found which effectively controlled symptoms without causing further thyroid enlargement. The same result was achieved in a few by the addition of a small amount of thyroid extract—1/4 gr. to 1 gr. (16 to 65 mg.) daily—the dose of thiouracil being maintained. Whether or not this has any advantage over the simple reduction of the thiouracil dose is uncertain.

Seven patients who previously had thyroidectomy all responded rapidly and very satisfactorily to the drug, but only two have shown remissions in spite of treatment lasting on the average 18 months.

Effects in Auricular Fibrillation

Thiouracil was used in 15 cases of thyrotoxic auricular fibrillation—14 women and 1 man, whose ages ranged from 43 to 81. In addition there were one woman who also had mitral stenosis and one case of paroxysmal fibrillation. Normal rhythm returned in 8 of 16 cases as a result of thiouracil administration lasting from 4 days to 15 weeks, with an average, excluding these two extremes, of 35 days. Four of these had congestive failure, which cleared up rapidly and in three has not returned. In the patient with paroxysms of auricular fibrillation the attacks had been frequent before treatment was begun, but thereafter she had only three attacks within the first month and none during the subsequent four months of observation. One other case, that of a woman of 72, first came under observation with toxic goitre and normal rhythm, rate about 100 per minute, and a high pulse pressure (175/0). There

was nothing in her history to indicate the occurrence of paroxysmal fibrillation, but after taking methyl thiouracil, 0.3 g. daily for 11 days, fibrillation developed. The drug was continued in the same dose, and 12 days later normal rhythm, rate 84 per minute, was recorded.

In eight cases thiouracil failed to restore normal rhythm. One of these patients was moribund when treatment was started, and death occurred on the sixth day; a second, aged 81, died after two months of thiouracil, which had not been given continuously because of toxic effects. Two ambulant patients dropped dead after two to three months of therapy, having responded fairly well apart from the persistence of the arrhythmia; one had mitral stenosis; and three had large retrosternal goitres. One patient with a large goitre who had thyroidectomy after showing resistance to thiouracil for over twelve months developed a short paroxysm of auricular fibrillation two days after the operation.

Toxic Reactions

Symptoms or signs suggesting toxic effects were present in 26 patients, but after various steps had been taken to prove which of these symptoms were in fact due to the drug, such as a period of interruption or substitution, 12 were excluded, giving an incidence of 14 genuine reactions. In only two was it necessary to stop the drug permanently because of the reactions it produced. The incidence of reactions was about the same with thiouracil and methyl thiouracil (13% and 11% respectively). In addition there were two patients who showed adverse effects with both drugs. On the other hand, methyl thiouracil was well tolerated by four patients who had suffered ill effects from thiouracil. Of 64 cases under treatment with the thiouracils in the past 12 months only six have developed toxic reactions, and only one has been observed in the past six months.

Table III shows the nature of the toxic effects, consisting mostly of rashes, swelling of face, eyelids, and feet, sore

TABLE III.—*Toxic Reactions*

No.	Dosage			Preparation	Duration of Treatment at Time of Onset	Symptoms
	Initial	Total (g.)	℞ (g.)			
1	High	34	0·1 b.d.	T	21 weeks	Rashes; sore throats
2	,,	18	0·1 b.d.	T	8 ,,	Swelling of eyelids
3	,,	38	0·1 o.d.	T	19 ,,	Unsteady; dyspepsia; K incr.
4	Low	9	0·1 o.d.	M	52 ,,	Rash; thyroid tender
5	High	85	0·1 o.d.	T	75 ,,	Granulopenia—2,800 W.B.C.; drug abandoned. Thyroidectomy
6	,,	58	0·1 t.i.d.	T M	64 ,,	Pains and tinglings in head and legs
7	Low	15	0·1 t.i.d.	M	8 ,,	Sore throat; dysphagia. Leucopenia 3,800
8	High	41	0·1 b.d.	T M	15 ,,	Rash on forearms
9	,,	70	0·1 b.d.	T	87 ,,	Sore throat; face and neck swelled
10	Low	9	0·1 o.d.	M	10 ,,	Rash on legs and arms
11	High	120	0·1 b.d.	T M	30 ,,	Swelling feet; headache; rashes
12	Low	40	0·2 b.d.	T	30 ,,	Rash—disappeared when dose halved; haemorrhage into thyroid
13	,,	31	0·1 t.i.d.	T	8 ,,	? Agranulocytosis. Died
14	High	32	0.2 o.d.	T M	9 ,,	Iritis. Drug abandoned

T = thiouracil. M = methyl thiouracil. ℞ = dose at time of reaction.

throats, and neck and head pains. The drug was given up in two cases—one because of the occurrence of iritis and one because of granulopenia. Case 13 probably had agranulocytosis—the only one in the series. In the eighth week of treatment and while taking 0.2 g. of thiouracil three times daily she developed sore throat and diarrhoea. Her own doctor saw her two days later, when she was found to have tonsillitis, pyrexia, and tachycardia, and death occurred suddenly on the fifth day of the acute illness. One further patient not included in Table III, who had a very large goitre and was being prepared for operation, developed an upper respiratory infection. She died in the eighth week of treatment. A severe pulmonary oedema was found at necropsy, and in the absence of a cardiac lesion to explain this the possibility of its being a thiouracil effect must be considered, as Drinker (1945) has shown that a thiourea derivative is able to cause pulmonary oedema in dogs when injected intravenously.

The duration of the treatment before the occurrence of toxic reactions varied widely from 8 to 87 weeks (Table III), with total previous doses of from 9 to 120 g. Reaction came no earlier when the initial dosage had been high (over 0.5 g. daily) than when it had been low (less than 0.5 g. daily). At the time of the reaction 4 patients were taking 0.1 g. daily; the other 10 were taking 0.2 to 0.4 g. daily.

Illustrative Cases

Case 1.—Mrs. B. P., born 1867. (Figs. 1 and 2.) An earlier report of this patient has been given (Cookson, 1945); before treatment in 1944, weight 70 lb. (31.75 kg.); previous weight, 140 lb. (63.5 kg.). Improved rapidly on thiouracil; has taken thiouracil up to the time of writing (July, 1947), except for several periods of two months when it was discontinued. In excellent health. Maintenance dose, 0.1 g. daily. Present weight, 109 lb. (49.5 kg.). Pulse rate, 74. The small nodular goitre originally present is no longer palpable.

FIG. 1.—Case 1, woman aged 77. September, 1944, before treatment with thiouracil.

FIG. 2.—Same patient as Fig. 1, after 33 months almost continuously on thiouracil: aged 80; quite well and active.

Case 2.—Mrs. B., born 1894. First seen August, 1944; nodular goitre; tremor of hands; pulse rate, 140 regular; B.P., 160/80; B.M.R. before treatment, +51%; after four weeks' treatment, +11%; after six weeks' treatment, −6%. Symptoms disappeared on thiouracil, which was continued for ten months; weight increase of 24 lb. (10.9 kg.); pulse rate, 70 per minute; feeling very well; goitre smaller and softer. July, 1947: weight stationary; pulse rate, 64 per minute; goitre smaller; patient feels very well; no thiouracil for two years.

Case 3.—Mrs. C. G., born 1882. First seen March, 1945; rather large cystic goitre; auricular fibrillation, ventricular rate, 156 per minute in spite of digitalis; B.M.R. before treatment, +35%; after three weeks' treatment, +15%. On the 25th day of thiouracil administration normal rhythm returned; thiouracil continued since except for two periods of a few weeks. Condition good and cardiac rhythm normal—rate about 70 per minute; goitre smaller. Total period of thiouracil administration, 28 months.

Discussion

The results show that thiouracil controlled the hyperfunction of the thyroid in all but six of 95 cases of toxic goitre. This control was maintained so long as the drug was continued. Further, in 40 cases there were remissions—that is to say, it was possible sooner or later to stop the treatment without the recurrence of symptoms over a period of two months or more. The time to stop thiouracil was judged by the response to treatment. If the dose can be progressively lessened, say, to 0.05 g. or less daily, and yet weight is still being gained and the pulse remains slow, indicating that thyroid function is on the low side of normal, the final step of discontinuing the drug may be taken. Although thiouracil was found to be effective in both the nodular and the smooth forms of toxic goitre the proportion of remissions was much higher in the smooth type. Relapses were noted in 15 of the 40 patients with remissions, but they were then readily controlled again with the drug. Later a second and even a third remission might occur in the same patient. The longest remissions observed were of a little more than two years—one in a woman with smooth goitre, and the other in a case of nodular goitre. Both are in excellent health and having no treatment whatever.

The six instances of failure of thiouracil to control thyrotoxicosis were accounted for by elderly cases with advanced cardiovascular changes and mental symptoms, by very large goitres, by one case of pregnancy, and by one patient in whom persistent hyperthyroidism appeared to have been induced by thyroid extract. Nevertheless a good result with thiouracil was seen in one patient with a very large goitre, who after two years' treatment had a remission which has now lasted 12 months.

Toxic effects were seen in 14% of cases, but in only two was it necessary to abandon the drug on this account. Agranulocytosis was almost certainly the cause of one death that must be attributed to the drug. With strict supervision, as practised now, this might have been avoided. The results showed little to choose between thiouracil and methyl thiouracil as a cause of toxic reactions, though occasionally methyl thiouracil was well tolerated after thiouracil had produced a reaction. Most toxic effects were seen when the daily dose exceeded 0.1 g. daily, and the incidence of these effects had declined in the past year or two concurrently with the use of lower doses. A further observation on thiouracil reactions was that their incidence was much higher when the drug was used in cases of slight or doubtful toxicity. None of these cases is included in this review.

Thiouracil is effective with occasional exceptions in all forms of toxic goitre, the only absolute bar to its use being the existence of tracheal pressure or any suspicion of malignant change. With a large goitre the drug may fail in its purpose, but in any case the patient with such a goitre would be well advised to have operation. In the elderly—say past 60—when toxic goitre has often produced auricular fibrillation, perhaps with cardiac failure, thiouracil was found suitable as the sole treatment. These changes must not be too advanced, however, for they are then irreversible, and there may not even be time for the drug to exert its effect. In one other group thiouracil was also particularly useful—that is, in young subjects with smooth goitres of moderate size. Here remission is probable, and this may be accompanied by the disappearance of the goitre itself.

The main handicap of this form of therapy is now not the hazard of serious toxic reaction but the length of treatment and the constant supervision which is necessary while this is in progress. This supervision is essential both for the adjustment of the dose, which is frequently necessary, and for the recognition of any adverse effects. A term cannot yet be put to the length of treatment. In a high proportion it is a year or two and may be even more, and remissions when they occur are often of limited duration. In spite of these drawbacks, however, there is no doubt that the antithyroid drugs now available have established themselves as a most valuable addition to the methods of treatment of toxic goitre, and in certain types as the method of choice.

Summary

The effects of thiouracil and methyl thiouracil in 95 cases of toxic goitre have been investigated over the period 1943–7. These drugs controlled the disease in all but six cases.

In 40 patients there were remissions lasting from 2 to 25 months; 15 of these have so far relapsed. A higher proportion of remissions occurred when the goitre was smooth than when it was nodular.

Toxic reactions were observed in 14 patients. Agranulocytosis was probably responsible for the death of one patient.

Thiouracil controlled the hyperthyroidism of nodular goitre, and in 8 of 15 instances of auricular fibrillation normal rhythm was restored. In one other case with paroxysms of fibrillation the attacks ceased.

Thiouracil produced its best results in toxic goitre in elderly patients and in young subjects with a smooth goitre of moderate or small size.

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Mr. J. Lyle Cameron, speaking on "The Care of the Mother" at the Royal Institute of Public Health and Hygiene on Oct. 22, said that the care of the mother really began as soon as the mother-to-be was born. A word must be said about the upbringing of the little girl—a duty which fell first and foremost upon the parents and not upon teachers or institutions. It was well to teach the naturalness of life and of all bodily functions. It was much better that the growing person should learn of such matters in a practical way from a parent than to hear them whispered archly by some older companion. Early instruction in sex matters was altogether a good thing. It should in no way run contrary to primitive modesty, which was a protective instinct and could indeed be characteristic of considerable charm. There was another point regarding health that was to be considered from a national point of view. To-day, under the stress and strain of very unsound economics, so many women were worried and suffered from anxieties. This had been very noticeable during the war, and actually seemed to be on the increase since post-war conditions had overwhelmed us. This state of affairs was quite apart from the diet and many insufficiencies in food varieties. The question might be asked: Should an expectant mother go out to work, either in a factory or other places of employment? It was quite safe, and could be in the best interests of her health, provided that the work did not entail strenuous exertion and that it provided a sufficiency of exercise. The expectant mother's home life must not be deranged or invaded by anxieties and, especially, disconcerting duties as a result of her work outside. She must be happy in her work and at the same time happy in her home.

MALNUTRITION OF THE NERVOUS SYSTEM*

BY

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What is meant by malnutrition of the nervous system? The most obvious example is the deficiency in the food of some substance necessary for the maintenance of normal nervous activity, and it is with this that I am here mainly concerned. But clearly malnutrition means much more than this. The food may be adequate but its absorption from the alimentary canal may be defective; or, though it is normal in amount and quality and normally absorbed, some metabolic disorder may interfere with its utilization or some local lesion may prevent it from reaching the nervous tissues. At one extreme dietary avitaminosis, at the other cerebral thrombosis, are causes of malnutrition of the nervous system, and between the two the distinction between disorders of nutrition and metabolism is by no means clear. But I am not here concerned with local lesions or metabolism, though neither must be altogether lost to sight. For the present purpose malnutrition may be defined as a failure of the nervous system to obtain substances necessary for its maintenance and activity as a result of defective diet or defective absorption from the alimentary canal.

If we list the food substances presumably necessary for the nutrition of the nervous system—proteins, fats, sugar, vitamins, and minerals—the large gaps in our knowledge at once become apparent. Concerning the need of the nervous system for proteins and amino-acids we know almost nothing; though recent work (Zimmerman and Ross, 1944; Albert and Warden, 1944; Weil-Malherbe, 1935) suggests that glutamic acid may be especially important for cerebral metabolism. In particular we do not know what part, if any, defective protein intake plays in causing deficiency syndromes. We know even less about the role of lipoids and mineral substances, though copper plays some part in the prevention of sway-back in sheep. Almost all we know is concerned with the metabolism of glucose by the nervous system and the part played in this by certain vitamins of the B group. Here it is worth remarking that man has taken over from the vegetable kingdom not only these vitamins but also their role in metabolism. Both aneurin and nicotinic acid are present throughout the vegetable kingdom, in plants, bacteria, yeasts, and fungi—aneurin being necessary for the breakdown of pyruvic acid, and nicotinic acid acting as a component of co-dehydrogenase (Schopfer, 1943). Indeed, these vitamins play so narrowly specific a part that they would be useless to us if our nervous systems did not metabolize carbohydrate in the same way as the plants. Moreover, we are doubly dependent upon the vegetable kingdom, for we consume the vitamins that the vegetables synthesize, and, in addition, bacteria in the intestine may be a substantial source of these vitamins by generating them *in situ* (*British Medical Journal*, 1945, **1**, 879).

Aneurin Deficiency

Beriberi

The view that beriberi might be due to a lack of more than one factor seems to have been disposed of by experimental work and by the observation of the correlation between the incidence of beriberi and the aneurin/non-fat-calorie ratio first noted by Williams and Spies (1938). This is well shown in the observations of Burgess (1946) upon prisoners of war. When the aneurin/non-fat-calorie ratio was above 0.3 beriberi was almost absent; when it fell below that figure the incidence of beriberi varied inversely with it (Fig. 1). But, as Walshe (1917–18) has

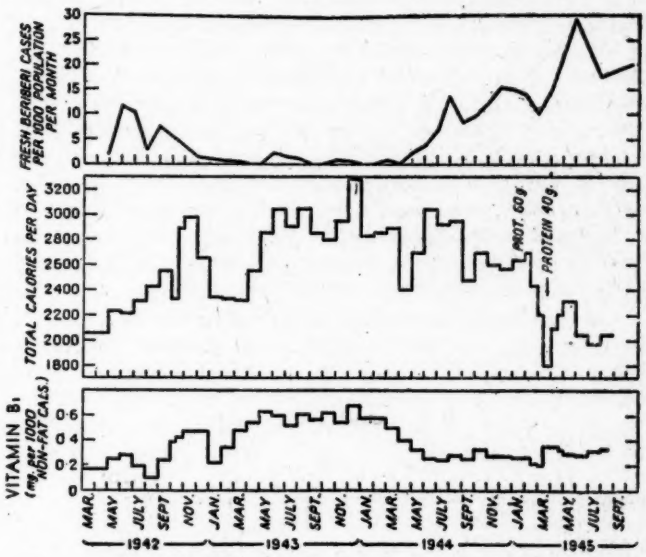

FIG. 1.—Monthly incidence of beriberi compared with estimated total calories and vitamin B_1/non-fat-calorie ratio of diet at Changi Camp (Burgess, 1946).

pointed out, aneurin is not an antineuritic factor in the sense that it is necessary for the nutrition of the peripheral nerves, and all the evidence favours his view that the polyneuritis in beriberi is caused by an intoxication with pyruvic acid and allied intermediate products of sugar metabolism which is incomplete owing to lack of aneurin. Hence the importance of the aneurin/non-fat-calorie ratio, for beriberi will not occur in the absence of sufficient carbohydrate to metabolize into pyruvic acid. It has been suggested that diabetic polyneuritis may be due to aneurin deficiency (Rudy and Epstein, 1945), but this is unlikely, for the diabetic whose tissues cannot utilize sugar normally is in the position of a patient with a high aneurin/non-fat-calorie ratio, and Lowry and Hegsted (1945) have shown that rats rendered diabetic with alloxan require less aneurin than normal animals and show no greater tendency than controls to develop symptoms of aneurin deficiency on a defective diet.

The role of aneurin deficiency in alcoholic polyneuritis is still debatable, but the observations of Brown (1941) that a group of patients given additional aneurin recovered no more quickly than a control group on a hospital diet is surely not evidence against it. Leaving on one side the question whether the two groups were comparable, there is no reason to suppose that aneurin promotes the regeneration of damaged peripheral nerves or that it can do more even in beriberi than put an end to the intoxication of a perverted sugar metabolism. The patient whose alcoholism and gastritis are treated and who is given a full and balanced diet is therefore likely to recover, even if his polyneuritis is due to aneurin deficiency, as quickly as one given excessive doses of aneurin. For somewhat similar reasons diphtherial polyneuritis fails to respond to diphtheria antitoxin. It is well known that aneurin will not lead to full recovery in chronic beriberi, probably because, as Wright (1903) showed, in severe beriberi the posterior root ganglion cells and the anterior horn cells of the spinal cord degenerate, and when this has occurred sensory and motor symptoms will be permanent. Like Walshe (1945) I have never seen

*Introductory Paper at a discussion at the Neurological Section of the International Congress of Medicine, Sept. 9, 1947.

a patient with chronic polyneuritis from any cause benefit from aneurin, but the therapy of chronic polyneuritis is no clue to its aetiology.

Wernicke's Encephalopathy

The evidence that Wernicke's encephalopathy is due purely to aneurin deficiency seems conclusive. Epidemiologically it occurs at the same time as beriberi. According to de Wardener and Lennox (1947) neuritic, cardiac, and oedematous manifestations of beriberi were present in 79% of their patients at Changi. The pathological changes in the nervous system have been produced experimentally by aneurin deficiency (Alexander *et al.*, 1938, 1941 ; Prados and Swank, 1942). The level of pyruvate in the blood is raised and its return to normal in response to treatment is parallel with the clinical improvement (Wortis, Bueding, Stein, and Jolliffe, 1942). Finally, aneurin is completely effective in early cases (de Wardener and Lennox, 1947).

This raises the question why some members of a population exposed to aneurin deficiency develop encephalopathy or cerebral beriberi while others show the other manifestations alone, and why Wernicke's encephalopathy ceases to occur in an exposed population though neuritic beriberi continues (Fig. 2). Does this depend upon individual susceptibility or upon other factors, such as rate of onset, influenced, for example, by dysentery and diarrhoea, which de Wardener and Lennox found an important predisposing cause ?

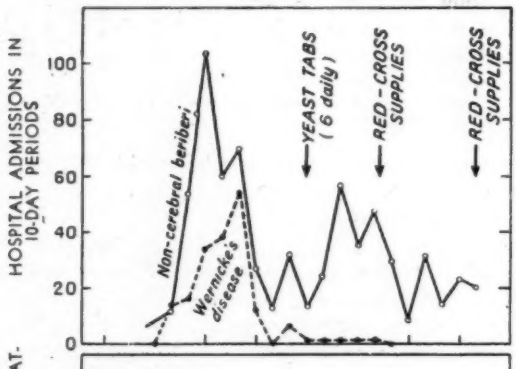

FIG. 2.—Hospital admissions of non-cerebral beriberi and Wernicke's encephalopathy, in ten-day periods, compared with aneurin/non-fat-calorie ratio of diet (mg. of aneurin per 1,000 non-fat-calories) (de Wardener and Lennox, 1947).

Though neurologists are concerned primarily with the neurological manifestations of aneurin deficiency it is well to emphasize that these are merely one by-product of disordered metabolism, which also profoundly affects the heart and blood vessels.

Pellagra

It is an old observation that pellagra is prone to occur in maize-eaters, and before the discovery of the B group of vitamins the cause of pellagra was thought to be an unknown toxic substance in the maize. It was then discovered that black-tongue, a disorder in dogs analogous to pellagra, could be caused by giving a diet deficient in nicotinic acid, and cured by giving nicotinic acid to affected animals. It seemed reasonable, therefore, to ascribe pellagra to deficiency of nicotinic acid. Later work, however, shows that this view was too simple. Krehl and his fellow workers (1945a, 1945b, 1946) have found that tryptophan relieves black-tongue produced by maize. It would seem that nicotinic acid and tryptophan or foods rich in tryptophan are to some extent interchangeable as preventives of black-tongue. It is suggested that tryptophan may lead to a change in the intestinal flora in favour of the synthesis of nicotinic acid in the alimentary canal. There is a further complication in that pyridoxin deficiency disorders the metabolism of tryptophan (Axelrod, Morgan, and Lepkovsky, 1945).

A different approach to the problem has been made by Kodicek, Carpenter, and Harris (1946), who have shown that maize has a high content of a plant hormone—indole-3-acetic acid, or hetero-auxine—which inhibits growth in rats and is again counteracted by nicotinic acid and tryptophan. This may be an important observation, since the auxines are present in many foodstuffs—e.g., peas, beans, and lentils, especially when sprouting—and in cultures of yeast, moulds, and bacteria (Jensen, Avery, and Burkholder, 1936). Hence the consumption of peas, beans, and lentils with the object of increasing vitamin intake may in some respects have the opposite result, and foods contaminated with moulds may similarly counteract vitamins in the food.

All the evidence supports the view that pellagra is due to deficiency of nicotinic acid *in the nervous system*, but when we ask why the nervous system goes short we discover how many factors are involved. Not only must the diet contain enough nicotinic acid for the needs of the body, but it must be balanced in other respects. Too much maize counteracts the nicotinic acid either because maize is relatively deficient in tryptophan or because it contains an anti-enzyme to nicotinic acid. Maize must be balanced by nicotinic acid or tryptophan or foods rich in tryptophan. Secondary pellagra introduces additional factors, since chronic alcoholism and diseases of the alimentary canal may impair the synthesis of nicotinic acid in the intestine, its absorption and its storage, or operate in other ways as yet unknown.

There is still much to be learned about antivitamins. In addition to hetero-auxine, which is an antivitamin to nicotinic acid, there exists an antivitamin to aneurin which causes Chastek paralysis, a disorder pathologically identical with Wernicke's encephalopathy, in foxes fed on raw fish (Green, Carlson, and Evans, 1942).

War Neuropathies and their Problems

It is doubtful whether the deprivations incidental to war brought to light any new deficiency syndrome, though some occurred on an unprecedentedly large scale. On the whole disappointingly little new knowledge has been gained from this rich material, mainly because the complexity of the factors involved, together with the difficulties of the circumstances, made a clear-cut scientific approach impossible. Something has already been said about beriberi and Wernicke's encephalopathy. The other principal syndromes encountered were: (1) painful feet ; (2) spinal ataxia ; (3) spastic paraplegia ; (4) certain cranial nerve lesions, especially retrobulbar neuritis, nerve deafness, and laryngeal palsies, which usually accompanied spinal ataxia ; and lastly (5) a rare but interesting myasthenic syndrome. I shall not deal with these syndromes in detail, but will merely make some observations upon their aetiology.

(1) *Painful Feet.*—This common and comparatively simple syndrome well illustrates the difficulty of establishing the aetiology of deficiency disorders in man. The pathogenesis might have been inferred from *(a)* the association of

syndrome with specific dietary deficiency, (*b*) the coincidence of its onset with that of other recognized deficiency syndromes in other persons, (*c*) its association with other syndromes in the same patient, (*d*) the effect of therapy. None of these has proved conclusive.

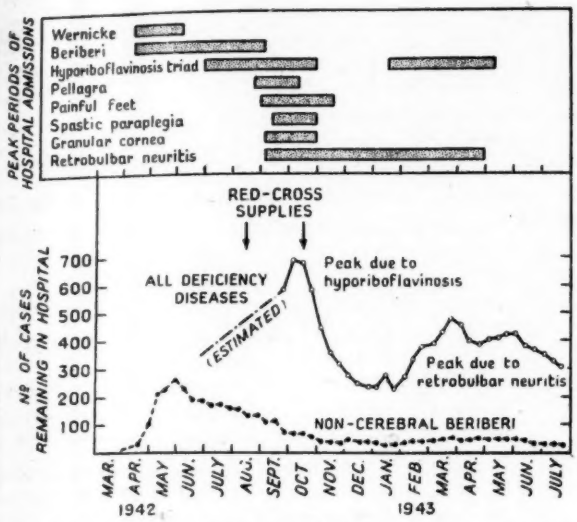

FIG. 3.—Peak periods of hospital admissions for principal deficiency diseases (de Wardener and Lennox, 1947).

(*a*) Dietary deficiencies were multiple, and it is difficult to select one as solely responsible, though Denny-Brown (1947) blames an exclusively cereal diet. (*b*) Chronologically the painful-feet syndrome occurred after the aneurin deficiency syndromes and somewhat after the onset of symptoms of hyporiboflavinosis, coinciding roughly with the peak of pellagra, spastic paraplegia, granular cornea, and the onset of retrobulbar neuritis (de Wardener and Lennox, 1947) (Figs. 3 and 4). (*c*) Oral and scrotal symptoms of hyporiboflavinosis preceded the outbreak (Simpson, 1946) or were associated with it in about 30% of cases (Cruickshank, 1946); retrobulbar neuritis was present in 10% (Simpson, 1946) and 13% (Cruickshank). Oedema and polyneuritis were rare according to Cruickshank, who found no associated disease in 42%. Raised blood pressure was found in 19% by Harrison and 30% by Cruickshank. (*d*) As to therapy, aneurin was ineffective; nicotinic acid or nikethamide gave the best results; foods rich in the B complex were less useful (Cruickshank). Intravenous calcium gluconate gave symptomatic relief (Harrison, 1946).

The same problems arise in connexion with the "captivity cord syndromes": (2) *spinal ataxia* and (3) *spastic paraplegia*. These syndromes occurred later in time than beriberi and Wernicke's encephalopathy. Burgess (1946) groups them together with retrobulbar neuritis and nerve-deafness as symptoms of hyporiboflavinosis, with the muco-cutaneous lesions of which they are associated. Denny-Brown considers that they are parts of the syndrome of pellagra, and Spillane (1947) draws attention to the resemblance between the spastic syndrome and lathyrism. Both spinal cord syndromes responded poorly to all known forms of vitamin therapy.

(4) *Cranial Nerve Palsies.*—The frequent association of two or more of these symptoms—anosmia, retrobulbar neuritis, trigeminal anaesthesia, nerve-deafness, and laryngeal palsy—with or without spinal ataxia in the same patient, suggests a common cause, though the evidence as to its nature is conflicting and inconclusive. Stannus (1944) suggests ariboflavinosis, and symptoms of riboflavin deficiency were present in Moore's (1937) patients, but these are by no means constant. Retrobulbar neuritis may occur in association with beriberi, and so may laryngeal palsy, especially in infantile beriberi, but not deafness or spinal cord symptoms, and aneurin was of no value in treatment. Denny-Brown (1947) favours the view that this group of symptoms is pellagroid, but nicotinic acid proved of no benefit in treatment. Spillane and Scott (1945) incriminate lack of an undetermined element in the B complex. The cause is thus uncertain at present. As long ago as 1888, and again in 1897, Strachan (1897) described an epidemic in the West Indies of painful hands and feet, ataxia, retrobulbar neuritis, deafness, and weakness of the voice, these nervous signs being associated with corneal damage and muco-cutaneous lesions of the eyelids, lips, tongue and nostrils. This fifty-year-old observation provides suggestive evidence for a common origin for this group of symptoms—and shows how little we have learned since.

A Myasthenic Syndrome

A number of instances of a myasthenic syndrome, perhaps identical with Gerlier's disease, or kubisagari, have been observed among prisoners of war and attributed to dietary deficiency. I mention this because I have seen one patient in the convalescent phase. This man was never a prisoner, but fell ill while in the Army in Malaya after the war. He was not short of food, though most of it was tinned, consisting of soya sausage, bacon, beans, cheese, and fish, such as salmon. Bread was made by the field bakery. The only fresh vegetables were a small quantity of sweet potatoes and yam beans. He ate no tapioca or other cereals. His symptoms followed an acute febrile illness, and consisted of typical myasthenia involving cranial nerves and limbs, temporarily relieved by "prostigmin." He was unable to

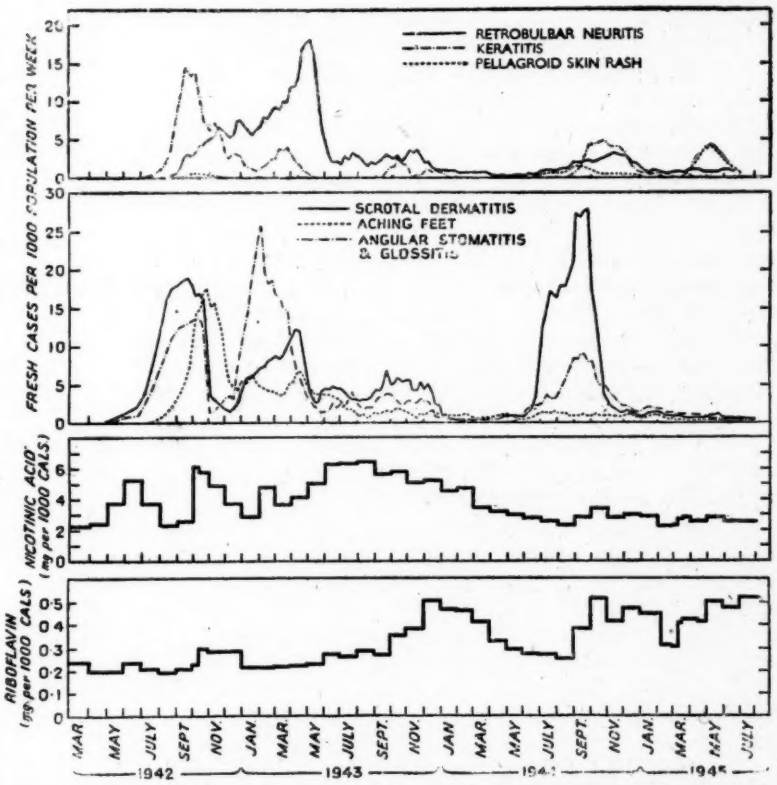
RETROBULBAR NEURITIS
KERATITIS
PELLAGROID SKIN RASH
SCROTAL DERMATITIS
ACHING FEET
ANGULAR STOMATITIS & GLOSSITIS
FRESH CASES PER 1000 POPULATION PER WEEK
NICOTINIC ACID (mg per 1000 CALS)
RIBOFLAVIN (mg per 1000 CALS)
MAR MAY JULY SEPT NOV JAN MAR MAY JULY SEPT NOV JAN MAR MAY JULY SEPT NOV JAN MAR MAY JULY
1942
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FIG. 4.—Weekly incidence of various deficiency conditions compared with nicotinic-acid and riboflavin contents of diet at Changi Camp (Burgess, 1946).

walk for several weeks and then slowly improved. I am not convinced that this is a deficiency syndrome. A precedent febrile illness regarded as dengue occurred in Musselman's (1945) and Katz's (1946) patients, and Katz noted that the myasthenic symptoms were in inverse relationship to the severity of the fever. In my patient an infective toxin temporarily damaging the myoneural junction seems the probable cause.

Intoxication or Deficiency?

Examples already given show that it is often difficult to distinguish between an intoxication and a deficiency. The verbal distinction is, of course, clear enough: a toxin is a harmful extra, a deficiency a harmful lack. But as soon as we get beyond the mouth difficulties arise. Food may be contaminated with a toxin, as, for example, Abyssinian wheat with flax-darnel (Brinton, 1945–6), or the food may be modified so as to become toxic, as the protein of agenized flour causes canine hysteria (Mellanby, 1947; Moran, 1947). Or a normal constituent of food may be toxic only in the presence of vitamin or other deficiency—e.g., maize in pellagra.

Lathyrism gives rise to a spastic paraplegia which closely resembles the spastic syndrome occasionally seen in prisoners of war. Denny-Brown believes that lathyrism has not been proved experimentally to be due to *Lathyrus sativus per se*, and suggests that flour made from this pea may be deficient in tryptophan and that this may neutralize the action of a vitamin, the consumption of lathyrus thus bearing the same causal relation to lathyrism that the consumption of maize or cassava does to pellagra.

But maize is toxic only in the sense that it leads to a tissue deficiency of nicotinic acid, and it might be thought that the crucial question is the state of the nervous system. Even here, however, the distinction between intoxication and deficiency is not clear-cut. Peters *et al.* (1945) have shown that arsenite damages the pyruvate enzyme system in the nervous system, and from this sprang the discovery of dimercaptopropanol (British anti-lewisite, BAL), which was designed to resemble the tissue thiols, to combine in their stead with trivalent arsenic and so protect them. As we have seen, aneurin deficiency also damages the pyruvate enzyme systems, and both arsenical poisoning and beriberi are accompanied by a rise in the level of blood pyruvate. Thus it would seem that arsenical poisoning may act by causing a local enzyme deficiency, and aneurin deficiency by causing a local intoxication.

In the past we have tended to think that by describing a disorder as toxic we have explained it, but it was only our ignorance of the finer processes of the metabolism of the neurone that forced us to be content with such vague conceptions as "intoxication" and "toxic polyneuritis." All that we have learned about malnutrition should teach us that whatever happens to the nervous system—not only states of avitaminosis but head injuries, infections, vascular lesions, and demyelating disorders—will need increasingly to be considered not only from the standpoint of morbid anatomy but also in terms of the chemistry of the nerve cell.

(Figs. 1 and 4 are reproduced from Dr. R. C. Burgess's paper on "Deficiency Diseases in Prisoners of War at Changi" (*Lancet*, Sept. 21, 1946, p. 411), and Figs. 2 and 3 from the article on "Cerebral Beriberi" by Captain H. E. de Wardener and Dr. B. Lennox (*Lancet*, Jan. 4, 1947, p. 11).)

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BIOCHEMICAL APPLICATIONS OF STABLE AND RADIOACTIVE ISOTOPES*

BY

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With but one exception the body does not discriminate between natural elements and their stable or radioactive isotopes. In addition the stable isotopes, with the exception of deuterium, have no deleterious effects on living cells even in the highest concentrations. In the case of the radioactive ones it is possible to employ such low concentrations that most human experiments can be carried out with safety, and all animal experiments with impunity, since genetic effects of the radiations can be ignored. These simple considerations have made possible to the biochemist a new kind of experimental approach which he has not been slow to use.

Radioactive Phosphorus

One of the earliest isotopes to become available was radioactive phosphorus (P^{32}), and of course it was administered as sodium phosphate by various routes to animals and its excretion observed and an analysis made of the skeleton and various organs to determine where and for how long it was retained. It was soon established that only a small fraction—less than 10%—is excreted in twenty-four hours, and of the total amount injected only a small proportion is present in the lymph and plasma a few

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hours after injection. The remainder has disappeared into the cells of the body, especially of the skeleton, the liver, and the intestine.

Precisely how this phosphorus is taken up by the cells is a matter of some general importance. By whatever route it is injected a high concentration of P^{32} occurs within a few minutes in the lymph and plasma. From the lymph the cells take up phosphate at a steady rate and discharge it back at the same rate into the same medium. There is no discrimination between ingoing and outgoing phosphate, and complete mixing takes place within the cell. The process consists, in fact, of a continuous diffusion in both directions across the cell wall, radioactive phosphate passing out of the cell long before all the inactive phosphate in it has been replaced. If the concentration of radioactive phosphate in the lymph is kept constant—and there are several experimental tricks for doing this—the conditions are simplified and it can be shown that the radioactivity per gramme of phosphate in the cell rises exponentially with time. Since the exponential curve is almost linear in the first part of its course, a simple measurement of the specific activity of cellular phosphate, after a time interval which is short in relation to the time required to replace all the phosphate, is sufficient to determine the steady rate of exchange of phosphate in the cell. For example, after four hours the activity of the phosphorus in the tibia of a rat is one six-hundredth that of the phosphate maintained constant in the lymph, and we may conclude that in four weeks an amount of phosphorus passes into and out of this bone equal to the total weight of phosphorus in it. This is called the replacement or turnover time. In a few cases where the turnover time is short it is possible to make allowances for the non-linearity of the growth curve and to obtain exact turnover values; but in general this is not possible, and the results obtained by assuming linearity are known to be of the right order only. However, to know the larger turnover times accurately and the shorter ones approximately has proved to be a matter of great importance to our understanding of the chemistry of the body.

Phosphorus Compounds

The phosphorus taken up by the skeleton is laid down for the most part in inorganic form, but elsewhere in the body it is incorporated into a large and still expanding group of complicated organic compounds. Outstanding among these are the phospholipids which are present in the blood plasma and in all cells. By transfusing radioactive plasma phospholipids to a dog and observing their rate of disappearance from the recipient's plasma, Chaikoff and his collaborators (Fishler *et al.*, 1943) have shown that the plasma phospholipids are replaced in six to ten hours. The liver is the main site of synthesis and degradation of these substances, since removal of the liver prolongs the turnover time to 33–160 hours. Removal of the intestine, on the other hand, has no effect. Although the liver produces enough phospholipids to renew the plasma reservoir inside ten hours it requires fifty hours to renew its own phospholipids. The intestine renews its phospholipids in forty hours, but the brain, which is rich in these substances, requires four weeks for their replacement.

Another important phosphorus compound of the body is nucleic acid, of which two main types are present—one characteristic of the nuclei, and the other found in high proportion in the cytoplasm of all cells. The P in the nuclear form is exchanged very slowly—about the same as in bone—but in the cytoplasmic form it is exchanged ten times as quickly. That is the position in normal adult cells, but when the cells are dividing—e.g., in embryonic tissues, in regenerating tissues, or in malignant growths—the position is vastly changed, the nuclear P exchange increasing ten to fifteen times. This confirms and establishes on a quantitative basis general impressions derived from the histology of the tissues; but the tracer method can go further than this—it can distinguish the rate at which nucleic acid P^{32} builds up inside a cell from that at which it disappears. In this way—and in no other—it can be shown that growth from any of the causes mentioned results not from an increased rate of synthesis of cell compounds but from a diminished rate of disintegration, so that the organism reaches maturity when it has accelerated its intracellular breakdown processes until they are as rapid as the synthetic ones.

It is clear also in all these studies that some injected phosphorus is excreted into the lower bowel, and it can be demonstrated that part of the phosphorus of our diet which is absorbed in the upper alimentary canal is re-excreted and mixed with unabsorbed phosphorus in the lower. An entirely different picture comes to light if this experiment is repeated using radioactive iron in the diet. Hahn *et al.* (1939) have shown that in a normal adult practically all the iron passes through the gut unabsorbed, but if the subject has been made anaemic new radio-iron is absorbed into the circulation. The new red cells which are produced differ from the old ones in having some of this radio-iron incorporated in the haemoglobin molecule. These radioactive cells persist in the circulation for some months, as do all red cells, and are finally destroyed in the spleen and liver, where their iron is stored. In time this iron finds its way back into the circulation for incorporation into new red cells. Here once again the tracer element is able to reveal something which could not have been discovered in any other way—namely, that the body is extremely conservative in relation to this particular constituent of the diet, endeavouring so far as possible to carry with it enough iron circulating internally to meet all its requirements. It is as conservative in relation to iron as it is liberal in relation to phosphorus. The mechanism by which the intestinal mucosa "senses" internal iron deficiency and responds by allowing some of the element to pass from the gut into the blood is not yet understood, but its beauty is impressive.

Glycine

A few days after administering the amino-acid glycine containing C^{13} in the methyl group and N^{15} in the amino-group to rats the isotopes are found in adjacent positions in the protoporphyrin of haemoglobin. This tells us much about the manner in which the body synthesizes the five-membered pyrrole ring and at the same time provides a convenient method of labelling the red cells of the blood. If N-labelled glycine is given to a human being the isotope is detectable in the red cells at the fourth day and the concentration rises steadily over a period of twenty-five days, remaining constant for a further fifty days, and dropping slowly to zero in the next 150 days.

Shemin and Rittenberg (1946), who first observed this behaviour, were quick to note its unusual character. Normally when a tracer is injected the concentration of labelled compound in a tissue or organ rises to a maximum as synthesis proceeds and immediately thereafter declines again as the labelled molecules are metabolized. The fifty-day period of constant isotopic porphyrin concentration can be explained only in one way. The porphyrin of the newly formed red cell is excluded from the metabolic reactions of the body and enters into these again only at the end of the life-span of the red cell. Statistical analysis of the results shows that the average life of a human red cell is 127 days. This method is not the only one leading to this result, but

it is particularly elegant in involving no more disturbance to the subject than is associated with feeding labelled glycine. The method further reveals that, when the red cell finally disintegrates, the porphyrin group, unlike iron, is not further utilized in the formation of new red cells but is excreted in the bile.

The body contains three important substances—choline, creatine, and methionine—with no obvious chemical relationship to each other except that each has a methyl group linked to the rest of the molecule through sulphur or nitrogen. Deficiency symptoms due to the absence of choline from the diet can be cured by giving methionine, and the absence of both choline and methionine from the diet affects the excretion of creatine as creatinine. There is clearly, therefore, a metabolic interdependence between these three substances, and a clue to its character is found by administering one of them with deuterium in the methyl group. The isotope is subsequently found in the methyl groups of the other two and nowhere else. It seems, therefore, that a methyl group linked through sulphur or nitrogen is handled by the body quite differently from a methyl group linked through carbon. We are introduced here to the idea of a vitamin-like importance in the diet of a particular radical. In not dissimilar fashion the amino-groups of all the amino-acids of the diet are merged in a metabolic pool from which the amino-acids of the tissues are derived. This is shown by administering N-labelled glycine or ammonia and finding the isotope in all the amino-acids except lysine of the tissue proteins.

Carbon

If carbon dioxide containing isotopic carbon is breathed in it is found that some of the carbon finds its way into glycogen in the liver and from there to other compounds of the body, thus disposing in one simple experiment of the belief that only plants and bacteria can utilize carbon in the form of carbon dioxide. Needless to say, biochemists in the last few years have investigated this phenomenon intensively, and no fewer than six distinctive chemical reactions are now known by which the body can fix carbon dioxide, the most important one being the condensation of carbon dioxide with pyruvic acid to give oxalo-acetic acid.

Arising out of this and other experiments much attention has been paid in recent years to acetic acid. In the past this has been little investigated because it is known to be present in insignificant quantities in the body and these are extremely difficult to measure precisely. With the advent of isotopes, however, an inefficient method of isolation may be made the basis of a precise method of estimation, as the following example will show. Supposing a compound containing C^{13} is given in the diet and we wish to know whether any part of this C^{13} is incorporated into acetate in the liver. A known weight of liver is mixed thoroughly with a known but excessive weight of normal acetate and the mixture is fractionated to recover a proportion of the acetate. At the same time a like proportion of labelled acetate is recovered—minute in amount but sufficient for mass spectrometric estimation. Multiplication of the result by the recovery factor tells us the weight of labelled acetate in the piece of liver. This has become an important general method of analysis known as the isotope dilution method.

When a fatty acid labelled in the carboxyl carbon is oxidized by the liver some acetate—but considerably more aceto-acetate—is found. This aceto-acetate is labelled in both carbonyl and carboxyl groups, indicating that it is formed by condensation of acetyl groups, methyl to carboxyl. Aceto-acetate is not further utilized by the liver but is oxidized elsewhere. The kidney, among other organs, can oxidize it and is known also to take up acetate, but normally no aceto-acetate can be found there. By incubating kidney slices with labelled acetate in the presence of an excess of normal aceto-acetate and demonstrating the presence of isotopic aceto-acetate in the excess recovered, Medes *et al.* (1945) have shown that the oxidation of acetate is in fact through aceto-acetate, but the latter is normally further oxidized as soon as it is formed.

An alternative tracer procedure to the above has been to feed labelled acetate and to investigate the more complicated molecules of the body to find what has happened to that part of it not immediately excreted. By this procedure the carbon skeleton of acetate has been identified in the dicarboxylic amino-acids of the tissue proteins, in the fatty acids of the liver and depot fats, in cholesterol, and in glycogen. It has been shown (Bloch and Rittenberg, 1945) that although the carcass of a 100-gramme rat contains but a few milligrams of acetate, more than a gramme of acetate is produced in its liver every day.

Conclusion

These developments, which are largely if not exclusively derived from isotopic studies, represent substantial contributions to biochemistry. They reveal numerous unsuspected metabolic pathways, and if some of these are but little used normally—as, for example, the fixation of CO_2—they may be of the greatest importance in disturbed metabolic states: e.g., in diabetes, where aceto-acetate and related ketone bodies are produced in abnormal amounts. They demonstrate that the quantity of substance in a tissue bears little if any relation to its metabolic importance, and that important intermediary metabolites may not even be present in detectable concentrations, thereby heralding a new dynamic point of view in which the body is conceived as in a state of incessant change, atoms and molecules displacing one another with surprising rapidity in every tissue. All that remains constant is the pattern into and out of which these atoms pass—a stereo-chemical relationship of atoms within molecules, and a spatial juxtaposition of molecules within tissues—which is specific for each individual and characteristic of living matter as a whole.

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The Annual Report for the year ending July 31, 1947, has been issued by the Royal College of Surgeons of England. It draws attention to the Supplemental Charter which was granted on May 20, and states that new by-laws have been submitted to the Home Office for approval. Fellows and members of the College have been co-opted to the Council in order to include various branches of practice not represented by the ordinary process of election. Arrangements have been made to hold special final Fellowship examinations in ophthalmology and otolaryngology, and the court of examiners is being enlarged to include the necessary specialists. Regulations for the Fellowship in dental surgery have been approved and the first 18 Fellows elected. The building of a residential hostel for post-graduate students is planned. During the year 158 Fellows have been admitted. After Jan. 1, 1949, candidates will not be admitted to the final Fellowship examination until three years after qualification and until they have served a period of twelve months in posts approved by the Council, six months of which must have been occupied in residence in a hospital recognized for the purpose.

DIABETES INSIPIDUS AND UTERINE ATONY

A CASE OBSERVED OVER A PERIOD OF 26 YEARS

BY

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Only the briefest references are found to the development and social behaviour of patients with diabetes insipidus. It may not be without interest, therefore, to give a detailed clinical history of a woman suffering from this disease whom I have observed for 26 years.

Case History

In December, 1921, a 17-year-old girl was sent to me for the first time by her doctor. There was nothing of interest in her family history. She had suffered from an occasional sore throat and migraine. Her appearance was normal except for slight oedema of the eyelids, dry skin, and slow reactions, which might have suggested some slight thyroid insufficiency. Menstruation had first appeared at the age of 15, and was irregular, with periods of amenorrhoea lasting a month or two.

Four months before coming to see me she had had a sudden immersion at the seaside, which had greatly upset her; the weather was cool and she had the sensation of having got very cold. From that day she had begun to pass water frequently and had grown considerably more thirsty, but had had no other abnormal symptoms. Of course, diabetes insipidus was diagnosed, based on the extraordinary thirst and polyuria and on the first tests made by the family doctor.

Clinical examination revealed nothing abnormal apart from the menstrual disorders. The sella turcica was normal. Examination of the eyes, carried out by Dr. Celada, revealed: "Reduction in the visual fields in the nasal and temporal halves, particularly the latter. The reduction in the superior and inferior part is equal to that of the nasal half: in the right eye, above, below, and internally, it amounts to 40 degrees; externally, to only 30 degrees; in the left eye, 30 degrees above, below, and internally, and 20 degrees externally. Disks slightly reddened, but no swelling. Visual acuity normal. No abnormality of the extrinsic or intrinsic muscles." Examination of the urine showed: 24-hour volume, 9.5 litres; specific gravity, 1002; reaction, alkaline; chlorides, 0.6%; urea, 2.6%; uric acid less than 0.25%; no glucose or albumin; deposit, *nil*.

An injection of 1.5 ml. of "pituitrin" caused pallor and a sensation of coldness, together with a reduction in the polyuria and thirst which lasted for three hours. Analysis of the urine during the next 24 hours showed: volume, 8.75 litres; S.G., 1003; reaction, alkaline; chlorides, 1.6%; urea, 1.96%; uric acid, less than 0.25%. There was some doubt about the efficiency of the pituitrin used for this test. The Wassermann reaction was negative. A full diet was recommended, and periodical injections of pituitrin and daily injections of "ovarin" and belladonna were prescribed.

April, 1922.—The patient improved considerably as a result of the first pituitrin injections, and the thirst and polyuria diminished without further trouble, other than pallor and urgency of defaecation after the injections. The tenth injection, however, produced intense dizziness and faintness. These effects were repeated and she had to give up the injections. A month later the dizziness grew less, but there remained a state of slight spasticity in the left arm and leg with coldness of the extremities, which had to be wrapped up in warm clothing. The slightest excitement produced palpitation. The thirst and polyuria had returned to their original state. A mercurial salt was prescribed, but she soon gave this up as it upset her and did not relieve the polyuria.

May, 1927.—I had not seen the patient for the last five years, during which time she had followed no treatment. The thirst and polyuria continued the same, but she had become accustomed to them. She was now suffering from severe headaches, with bright spots before the left eye. The spasticity of the limbs had disappeared. She was passing 20 litres of urine in 24 hours. The blood pressure was 140/80 and blood chlorides 555 mg. per 100 ml. There was a considerable increase in the size of the left breast, with great enlargement of the areola and nipple and exudation of drops of a serous liquid with some admixture of blood, which issued both spontaneously and on pressure. I prescribed a weekly injection of a new posterior-pituitary preparation, and, in addition, strychnine and insulin, and a chloride-free diet.

October, 1927.—She had not been able to stand the pituitary injections after the third and fourth, and therefore gave them up as well as the rest of the treatment. The polyuria and thirst persisted. The nervous phenomena had disappeared. The breast condition had not altered.

February, 1933.—The diabetes insipidus was still the same and she followed no treatment. She had married the year before. Pregnancy began at once and she was much troubled by vomiting. Later, parturition seemed to start several times, but the pains stopped almost immediately. After five days without further pains she was delivered of a full-term female child, which was stillborn. There was no change in the polyuria and thirst during pregnancy. She now consulted me because she had had "influenza" and was left with intense headache and uncontrollable projectile vomiting. Menstruation was normal, though scanty. No abnormality was found in the nervous system. Pituitrin and a sedative for the vomiting were prescribed.

February, 1935.—She told me that the cerebral phenomena had soon ceased. Her general condition was good. Since her confinement the polyuria had dropped to about 7 litres a day, with a parallel lessening of the thirst. She followed no treatment. Menstruation was still scanty but regular. In the interval since her previous visit she had become pregnant again, having had a spontaneous miscarriage at the third month. The blood pressure was 130/60. A fresh Wassermann reaction proved negative; when the blood was taken from her for this she had a severe faint. I suggested radiotherapy of the pituitary region, but she refused.

October, 1935.—She wrote that she was pregnant again, and she had the same polyuria and much sickness. I advised cortical extract in small doses, and the necessary quantity of pituitrin at the time of parturition.

March, 1936.—The pregnancy ended happily. Her labour pains were very slight, but, as I had advised, she was given at intervals up to five injections of pituitrin, thanks to which normal delivery of a full-term child was obtained.

May, 1936.—She wrote that she was again pregnant.

April, 1947.—I saw her again after this long interval (due to the Spanish war and its consequences). The 1936 pregnancy also ended with a total cessation of the labour pains almost as soon as they had started. Owing to the abnormal circumstances in which she found herself she was unable to obtain pituitrin, and three days after the cessation of the labour pains a dead foetus was removed. The patient is now 43 years old. She lives with her daughter—her only living child—who is completely normal. The mother also appears normal. She still has to drink a great deal—three litres more or less during the night alone—and micturition is proportionately abundant; but she feels well and has become accustomed to so much drinking and passing of water. She leads a normal life. Her periods are regular and the flow very scanty. A year ago the dizziness reappeared and she also has sensations of cold in the limbs on the left side. Analysis of urine showed: volume, 11 litres; S.G., 1006; no abnormal constituents. Blood sodium, 284 mg. per 100 ml.; blood calcium, 4.08 mg. per 100 ml. The blood pressure was 170/90. There was slight accentuation of the aortic second sound. A radiograph of the cranium was normal except for slight frontal hyperostosis. A preparation of folliculin was prescribed with "euphyllin" and phenobarbitone occasionally.

Comment on the Case

The diabetes insipidus in this case is of the kind called "essential," though mistakenly, since present-day anatomical and experimental data enable us to assert that there is always a disturbance of the hypothalamic–pituitary mechanism in these essential cases as well as in the "symptomatic" ones, the only difference being that in the

latter the neoplastic, syphilitic, traumatic, or other lesion can be diagnosed, whereas in the former it cannot. The distinction between essential and symptomatic diabetes insipidus still found in books as up to date as Duncan's (1946) and others must be abandoned.

A curious factor in the case is the aetiology and particularly the sudden immersion, which the patient points to as the starting-point of her polyuria. I believe I was the first (Marañón, 1920)—and I may have been the only one—to call attention to this type of aetiology by publishing illustrative cases. The important subject of emotion in the aetiology of endocrine disturbances has again become topical on account of the increased interest in psychosomatic medicine. There is no doubt that the endocrine glands, owing to their dependence on the vegetative hypothalamic centres, play a constant and essential part in the physical changes of emotion, and it may be supposed that if there is previously a state of unstable equilibrium in the function of one of these glands, due to congenital weakness or to a latent lesion, such emotional changes may be enough to upset the balance and give rise to the clinical syndrome Immersion, which is generally accompanied by an impression of sudden terror, might by this mechanism—i.e., by acting on an unstable hypothalamic–pituitary system—cause the clinical appearance of diabetes insipidus. It is observed that a passing polyuria is a habitual consequence of immersion in cold water; therefore diabetes insipidus might be the pathological prolongation of a physiological occurrence.

In the long course of the patient's illness I have never been able to assert the existence of any pituitary, midbrain, or other localized lesion. Yet it must be remembered that on several occasions she has had severe attacks of headache, some with vomiting, scintillating scotoma, and spasticity and paraesthesiae localized to the limbs of the left side. These phenomena have usually appeared after the injection of pituitrin. In my experience intolerance of pituitrin is very common in cases of basal cerebral lesions. Remember, too, the spontaneous unilateral hypertrophy of one of the breasts, with a serous secretion, which phenomenon also occurs in cases of neoplastic lesions of the hypothalamic-pituitary mechanism. Therefore we may be dealing with a non-malignant non-progressive lesion of small size: this would explain the absence of permanent focal symptoms. There was never any possibility of confirming this supposition by the normal methods of investigation.

Discussion

Authors refer in vague terms to the "course" of diabetes insipidus. This varies very much from one case to another. In 1920 I wrote that in the course of diabetes insipidus "the usual thing is variety." In general it is accepted that the course depends on the lesion causing the condition, and cases can accordingly be classified under three headings: *(a) Cases with a rapid course*—those produced by malignant tumours of the pituitary or the hypothalamic region: *(b) Cases with a medium course*—those produced by lesions capable of cure spontaneously or by treatment, or which cause death after a period of chronicity, such as traumatic haemorrhages and syphilitic or tuberculous lesions; and (*c*) *Cases with a very prolonged course*—those in the *essential* group—i.e., without discoverable lesions; according to the various authors the average duration of these cases is from twenty to thirty years. One of Weil's patients had had the disease from childhood and lived to be 80. But I have not come across any case under one single observer with such a long history as the present one.

It should be noted that in my case, as in others among those published, the patient finally gave up treatment with posterior-pituitary extract injections. This often occurs when there are symptoms of intolerance. But after some time the system becomes adapted to the pathological thirst and polyuria. These patients end by arranging their lives to fit in with this need of water and their need to micturate, doing so automatically and in a way compatible with a normal existence. They even spend good nights, drinking and passing water in a manner compatible with sleep. My patient was in despair at first because of her polyuria, but now she is quite untroubled by it.

What I particularly want to emphasize *is the behaviour of the patient's reproductive function*. On this point authors are extremely vague. Yet it is known that some women with diabetes insipidus have been able to have children, although it is true that they sometimes pass the disease on to their offspring with a dominant Mendelian character. The family described by Weil is always mentioned: in five generations there were 220 members and 35 cases of diabetes insipidus (see Marx, 1945). I have seen only one hereditary case (Marañón and Bonilla, 1925)—a mother with diabetes insipidus which appeared and disappeared spontaneously whose child had severe diabetes insipidus from the age of five months. The majority of diabetic women either do not marry or are sterile.

In the present case the syndrome of uterine atony is very curious, occurring as it did in all her confinements. The role of the oxytocic hormone, or oxytocin (produced in the posterior lobe of the pituitary), in the mechanism of normal parturition is not yet clearly understood, nor is it universally accepted. If this action is admitted—and I am one of those who do admit it—we have also to admit that deficiency or lack of the hormone may produce a deficiency in the uterine contractions and, therefore, abnormal parturition. Physiologists are usually very reserved in this respect, basing their ideas on the fact that in animals extirpation of the posterior lobe does not prevent pregnancy or parturition (Houssay and others, 1946). But, as Houssay recognizes, these experiments are worthless, since it is known that after extirpation of the posterior lobe there are left in the pituitary stalk and tuber the remains of posterior pituitary tissue capable of fulfilling the functions of the latter. On the other hand it has been proved that electrical stimulation of the pituitary body precipitates and intensifies uterine contractions in pregnant rabbits, just as would occur if oxytocic hormone were injected (Haterius and Ferguson, 1938). It has also been proved that experimental section of the supra-optic–hypophysial tract, which joins the hypothalamus to the posterior pituitary, in pregnant females results in a prolonged labour with incomplete expulsion or even non-expulsion of the foetus and sometimes with concomitant polyuria (Fisher, Ingram, and Ranson, 1938).

Physiologists have failed to note some facts in clinical knowledge which confirm these experimental findings. I refer to the observations published by Cushing (1932) and by myself and Richet (1940) of repeated uterine atony due to lesions of the posterior lobe of the pituitary. As I have repeatedly commented on such cases elsewhere, I confine myself here to recalling them. Cushing's case was that of a woman with intractable uterine atony who later showed signs of a basal tumour; at operation a tumour destroying the posterior lobe was found. My case was that of a woman in whom, following an attack of epidemic encephalitis, there appeared a severe syndrome of posterior-pituitary insufficiency with repeated and intractable uterine atony. It is true that such cases of uterine atony due to posterior-pituitary lesions are very rare, but this can be explained by the fact that women with such lesions seldom become pregnant. But the published cases are very suggestive, and the present case furnishes further evidence

Summary

Personal observation of a woman suffering from diabetes insipidus over a period of 26 years has enabled me to ascertain the complete adaptation of such a patient to a normal life when the lesion is not fatal. It has also enabled me to study one more case of uterine atony undoubtedly related to hypothalamic–posterior-pituitary insufficiency.

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NEPHRITIS IN TEXTILE WORKERS

BY

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On May 24, 1947, in a leading article in the *British Medical Journal* (p. 727) on the subject of oxygen poisoning, the statement is made that "the inhalation of textile dusts is a steady source of death from nephritis and a group of conditions whose common factor is hyperpiesia."

It is the purpose of this paper to examine the evidence on which this statement is based. The information is obtained from the Registrar-General's Decennial Supplement for 1931, which shows a considerably increased mortality due to nephritis in certain groups of textile workers. In this fascinating document the causes of death are compiled from death certificates in the years 1930–2. I do not happen to have a textbook of medicine of that date readily available, but the fifth edition of Price's *Medicine*, published in 1937, still describes chronic interstitial nephritis as an entity and does not mention malignant hypertension at all. We must therefore from the outset be on guard against the assumption that nephritis appearing on a death certificate in 1931 bears any relationship to nephritis as commonly understood among physicians in 1947. Fortunately we can investigate this initial difficulty fairly easily.

The age incidence of deaths from nephritis and similar causes in 161 cases of which I have personal records is shown in Table I. From this it is quite clear that the main incidence of death from nephritis is under the age of 45. Only when deaths from malignant hypertension are added does mortality become considerable at 45 to 55 years of age.

TABLE I.—*Deaths from Renal Disease : Author's Cases*

Age (years):	0–14	15–24	25–34	35–44	45–54	55–64	65–69	70+
Nephritis, type I (Ellis) ..	7	17	15	6	5	0	0	0
„ type II („) ..	8	14	5	5	4	3	0	0
Renal dwarfism type	1	5	2	0	0	0	0	0
Polycystic kidney	0	0	1	0	1	0	0	0
Chronic pyelonephritis ..	0	3	4	10	1	1	1	1
Amyloid kidney	0	0	0	4	0	0	0	0
Pregnancy kidney	0	1	1	2	0	0	0	0
Diabetic kidney	0	0	1	1	3	5	0	0
Miscellaneous renal deaths (polyarteritis nodosa, renal Tb., hydronephrosis, etc.)	0	5	2	4	4	6	2	0
Total renal diseases ..	16	45	31	32	18	15	3	1
Malignant hypertension ..	0	0	0	12	25	8	0	0

The above figures do not include non-renal deaths from essential hypertension or deaths from prostatic obstruction.

The Registrar-General's figures for the age incidence of death from nephritis are totally different, as shown in Table II, where it will be seen that the main mortality is over the age of 45 and must largely consist of deaths from hypertension. It is my experience in consulting practice that many cases of hypertensive heart failure with albuminuria are diagnosed by their doctors as chronic interstitial nephritis. There is a slight difference in age distribution between the various social classes, in that the lowest class has a rather higher percentage of deaths in younger persons; these are probably deaths from true nephritis related to infections.

TABLE II.—*Deaths from Nephritis (Registrar-General, 1930–2; Death Rate per 100,000)*

Age (years):	16–24	25–34	35–44	45–54	55–64	65–69	70+
Males	15	9	18	49	108	219	389
Married women ..	11	9	18	40	86	160	239
Single women ..	15	9	17	36	74	128	247
Total	41	27	53	125	268	507	875

The mortality from so-called nephritis for the combined social classes III and IV (into which the textile workers fall) is shown in Table III, and in Table IV are listed the deaths from nephritis in those groups of textile workers in which the mortality from this complaint is said to be excessive.* It will be seen that the increased mortality occurs between 45 and 55, the age of essential hypertension, not that of nephritis.

TABLE III.—*Deaths from Nephritis in Social Classes III and IV combined (Registrar-General, 1931)*

Age (years):	16–	20–	25–	35–	45–	55–	65–	75+
Total ..	166	272	573	858	1,940	3,134	4,070	2,417
Percentage	1·2	2·0	4·3	6·4	14·5	23·4	30·4	18·0

TABLE IV.—*Textile Workers with Excessive Incidence of Deaths from Nephritis (Registrar-General, 1931)*

Age (years):	16–	20–	25–	35–	45–	55–	65–	75+
Group 29 (textile spinners—cotton)	3	2	3	5	17	19	39	15
„ 30 (textile spinners—wool worsted, etc.)	0	1	2	2	3	3	4	3
„ 32 (textile weavers—wool worsted, etc.)	0	0	2	1	11	6	11	7
„ 33 (textile strippers and grinders—cotton)	0	0	1	0	5	5	0	0
„ 34 (textile dyers) ..	0	2	2	2	11	19	19	6
Totals	3	5	10	10	47	52	73	31
Percentage	1·3	2·2	4·3	4·3	20·3	22·5	31·6	13·4

If it is in fact hypertension which causes excessive mortality from "nephritis" in cotton workers one would expect an increased incidence of other effects of hypertensive disease. The standardized mortality ratio (S.M.R.) of cerebral vascular lesions, compared with that of nephritis for the occupational groups concerned, is therefore shown in Table V, and it is clear that mortality from cerebrovascular disease is about as much in excess of normal as that from so-called nephritis.

At this stage the impatient reader might remark that whatever name is given to the disease there is an increased

* Analysis of Tables III and IV by the χ^2 test shows $P>0.9$. The differences in age incidence of nephritis in textile workers and in the population from which they come is therefore not significant.

TABLE V.—*Standardized Mortality Ratio at Ages* 20–65 (*normal* 100)

		From Nephritis	From Cerebral Vascular Lesions
Group 29	Cotton spinners	135	151
	Wives	*136*	131
„ 33	Cotton strippers and grinders	220	*217*
	Wives	233	*175*
„ 34	Textile dyers	171	170
	Wives	*93*	144
„ 174	Cotton blow-room workers	300	200
	Wives	*200*	*33*

The figures in italics are not statistically significant owing to the small numbers of certified deaths concerned.

mortality among certain trades from some condition certified by doctors in 1930–2 as nephritis, and it is not a matter of first importance what nomenclature is used to describe it. But there is a fundamental difference in aetiology between nephritis and essential hypertension in that the one is, so far as we know, largely the result of environmental factors (reaction to infection), whereas in the other the main and overriding factor in aetiology is heredity (Weitz, 1923; Hines, 1937–8; Platt, 1947). In other words, one would look first for environmental factors such as humidity, conditions of work, nutrition, and liability to infection if true nephritis were proved to be common in a certain group of work-people, but one would look first for evidence of inbreeding if one were investigating essential hypertension. This does not mean that the liability to death from essential hypertension cannot be influenced by environment; it is merely a matter of the most likely major influence at work, for in general it will save time and mistakes to examine that first. It will be seen from Table IV that the wool workers (groups 30 and 32) together contribute less than a quarter of the deaths from nephritis to the total for the three years in question, and we will therefore confine our remarks to the cotton industry.

Inbreeding, of course, is well known to occur in cotton towns, and to a large extent we are dealing with hereditary trades. If hereditary influences are at work in a disease like hypertension with a roughly even sex distribution we should expect the wives of workers in the affected groups to be affected. That this is the case is also shown in Table V, and it is interesting to contrast these figures with those for paperhangers and painters, in which the possibility of lead poisoning arises. In these trades the high S.M.R. for nephritis (131) and cerebrovascular lesions (151) in the men is not shown among their wives, for whom the figures are 86 and 82 respectively. Before accepting this very striking demonstration as proof against an industrial cause of nephritis in the textile trades, however, it must be admitted (as indeed it is noted by the Registrar-General) that many of the married women are also engaged in the cotton trade and so may be exposed to the same influences as their husbands.

If heredity is at work one might expect some increase of hypertensive disease in the surrounding population. This is in fact the case, for the S.M.R. in the region North IV (Lancashire and Cheshire) in 1931 was 122 for nephritis and 119 for cerebrovascular lesions (normal 100). These are considerable increases, having regard to the size and heterogeneity of the population.

The percentage of persons suffering from any hereditary disease in a population will tend to remain stationary under conditions of random mating, so that communities relatively isolated and inbred may for a long while show a tendency to suffer more from a particular inherited trait than the population at large.

A difficulty arises over occupational group 31 (textile weavers—cotton), in which the mortality from nephritis is not excessive (S.M.R., 84). There are two reasons for not accepting this discrepancy as weighing heavily in favour of an occupational factor, however. The first is that the figure of 84 is not statistically significant, the numbers of deaths being too small; and the second is that the mortality from nephritis in the 1921–3 report was actually a high one—i.e., the cotton weavers in previous years suffered the same mortality from so-called nephritis as their workmates in other branches of the trade. The mortality for wives in this group is unfortunately not stated.

In Table VI an estimate of deaths from degenerative cardiovascular diseases in various occupational groups has been made by combining deaths (at ages 35 to 70) shown as cerebrovascular lesions, myocarditis, angina pectoris, and nephritis. It is seen that group 70 (clergy) actually have the highest incidence because of a likelihood of dying from angina pectoris. The second column of figures shows the deaths from cardiovascular degenerative diseases omitting angina. This table merely illustrates how occupational groups differ with regard to degenerative diseases in general. If these figures do not prove that angina among clergymen is due to the inhalation of incense they also fail to prove that nephritis in cotton workers is due to the inhalation of textile dusts.

TABLE VI.—*Percentages of Occupational Groups dying of Degenerative Cardiovascular Disease at Ages* 35 *to* 70

	Deaths	The Same Without Angina
Group 31: Textile weavers—cotton (no abnormal mortality from nephritis; S.M.R., 94)	29·1%	27·1%
„ 34: Textile dyers (nephritis S.M.R., 171; total S.M.R., 123)	30·9%	28·7%
„ 35: Makers of textile goods, etc. (mortality generally normal; S.M.R., 93)	26·6%	22·6%
„ 70: Anglican clergy (S.M.R., 69)	35·4%	25·5%
„ 81: Draughtsmen, costing clerks, etc. (very healthy; S.M.R., 65)	23·5%	19·7%

Knowledge advances and fashions in certification change. The accuracy of all statistics is dependent upon the accuracy of the data from which they are compiled. Owing to the war the next decennial report will presumably be based on the 1951 census (1941 being omitted). I venture to predict that by that time there will be a sharp decline in nephritis among older persons and a corresponding increase in deaths from hypertension and hypertensive heart failure.

In certain textile trades there may be influences at work whose effect is to hasten or even to initiate cardiovascular and "renal" disease. This investigation of the evidence does not disprove such a possibility, but it suggests that before setting out on a laborious, time-consuming, and expensive investigation into the cause and prevention of nephritis in textile workers we should need more evidence that it exists. In particular we would require evidence that there is a renal syndrome among textile workers which is in some way different in its incidence, symptomatology, or course from hypertensive disease in the general population.

Conclusions

This paper proves nothing. It suggests that the deaths from so-called nephritis in textile workers are in all probability due to hypertension, and can be as easily explained by natural variations in the genetic constitution of an inbred population as they can by environmental influences.

This should be borne in mind before making the assumption that such deaths are due to "the inhalation of textile dusts."

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Medical Memoranda

Volvulus in a 48-hour-old Baby: Operation: Recovery

The "acute abdomen" in a baby 48 hours old is very rare indeed. Volvulus due to some developmental defect is perhaps the commonest cause in the newborn. The general symptoms of intestinal obstruction given by Zachary Cope (1946)—shock, vomiting, constipation, distension, and visible peristalsis—were all present in the following case, but were difficult to interpret.

Case Report

The patient was a male first child of a mother aged 29 and a father aged 32. The mother showed a renal glycosuria from the fifth month of pregnancy and a mild thyroid deficiency. The presentation was occipito-posterior, and rotation was spontaneous. The child was born at 12 noon on June 18, 1947, after twelve hours' labour, delivery being normal. Vernix caseosa was rather more than usual. The child weighed 8 lb. (3.6 kg.).

About four hours after birth the child began to vomit yellow fluid, followed later by bile-stained fluid. He vomited and cried intermittently through the whole of the following night, and next morning was put on glucose-saline, which he returned immediately. He refused the breast and cried after the glucose-saline feeds. No meconium had been passed since birth. Abdominal distension was not detected, but I made a provisional diagnosis of stenosis of the duodenum. The father informed me that he had noticed a small amount of bright red blood in the vomit.

On the morning of the 20th the child looked thin, dehydrated, grey, and shocked, and on being put to the mother's breast he vomited a large amount of altered blood-stained fluid. Dr. Morton-Stewart was called in consultation, and the case was considered to be haemorrhagic disease of the newborn. The child was given 10 ml. of the father's blood intramuscularly and an injection of "kapilon." I saw the child again six hours later, when a glycerin enema was given without result. Faecal vomiting very similar to that of an adult began and the abdomen was noticed to be distended. Visible peristalsis was observed. Dr. Morton-Stewart was again seen in consultation, when the diagnosis of intestinal obstruction was made. Mr. Young was also called in consultation. A catheter was passed down the oesophagus to investigate whether the abdominal distension was from stomach or bowel. The child then had a bulky faecal vomit and passed meconium for the first time. The result of the test was therefore inconclusive.

The gravity of the situation was explained to the parents and immediate operation advised, the diagnosis being intestinal obstruction due to a developmental defect.

Operation.—At 11.45 p.m. on June 20 the operation was performed under open ether by Mr. Young, with Dr. Divine as anaesthetist. A right paramedian incision was made, and some free fluid was found in the peritoneal cavity. The duodenum and upper part of the small intestine were very dilated and engorged. Evisceration of the small gut showed that the small intestine was twisted in a clockwise direction owing to non-descent of the caecum. The bowel was rotated anticlockwise for two and a half turns, and the abdomen was closed in layers.

During the operation, which lasted twenty-five minutes, the child regurgitated faecal fluid and gave the anaesthetist cause for anxiety. The patient was put on intravenous drip saline and placed in an oxygen tent.

Apart from widespread oedema the child made an uneventful recovery and was given breast milk, obtained from the mother, after two days, being put to the breast after a further seven days. At three weeks the baby was only 1 lb. (450 g.) below birth weight. The oedema gradually disappeared, being probably due to the drip saline.

Comment

The diagnosis was not easy, especially in view of the vomiting of blood. Thompson (1940) in the description of a very similar case draws attention to the association of volvulus in the newborn with gross haemorrhage from the intestinal tract, leading to the belief that his case was one of haemorrhagic disease of the newborn. It was, however, successfully operated upon on the ninth day.

Buckley and Wells (1944) record five fatal cases in which the predominant symptoms were vomiting, visible peristalsis, and a bloody motion. They emphasize that "in a newborn infant where vomiting cannot be explained on the basis of cerebral haemorrhage or infection, torsion of the intestine must be considered seriously." They also mention that evisceration of the small intestine is essential to avoid missing the diagnosis and for the proper reduction of the volvulus.

Borow and Borow (1937) reported a similar case in a baby 4 days old, which they believed to be the first to be operated on successfully. The predominant symptoms were vomiting, the passage of mucus and blood, and distension.

The occurrence of persistent vomiting in the newborn in association with the passage of blood in the motion or blood by the mouth with or without visible peristalsis or abdominal distension should make the diagnosis of torsion of the intestine a big probability. Absolute constipation must not be depended upon. Abdominal distension and visible peristalsis are late although helpful symptoms.

I wish to express my indebtedness to Dr. Morton-Stewart, to Mr. Young, who performed the operation, and to Dr. Divine, the anaesthetist.

R. D. B. Wright, M.B., Ch.B.

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The Use and Value of BAL in Gold Dermatitis

The drug BAL (2,3-dimercaptopropanol, British Anti-Lewisite) has been applied to the treatment of acute arsenical poisoning (*Journal*, Oct. 4, 1947, pp. 520, 536), and its use as a remedy for gold dermatitis has recently been reported in America (Cohen *et al.*, 1947; Regan and Boots, 1947). In all, ten cases of the latter were treated, nine successfully. The following is a brief record of a case of gold dermatitis, the successful treatment of which appears to be due to the use of BAL.

Case Report

A woman aged 55, with a three-years history of rheumatoid arthritis, received a course of "myocrysin" (total of 1 g.) over a period of ten weeks, finishing on June 2, 1947. On June 6 there was slight generalized irritation of the skin. One month later an exfoliative dermatitis started on the face, and subsequently spread to the neck, scalp, forearms, hands, and feet; there was also a stomatitis with marked buccal ulceration. The rash was still spreading when she was admitted on Aug. 11. On Aug. 14 she was given intramuscularly, four-hourly for four doses, 2 ml. of 5% BAL dissolved in arachis oil containing 10% benzyl benzoate, and the following day 2 ml. morning and evening. On the evening of Aug. 15 her temperature rose to 100° F. (37.8° C.), and although she showed no other signs of intolerance it was thought safer to discontinue the BAL. The rash stopped spreading after the second day, and thereafter steady improvement took place. She was discharged on Aug. 25, with the buccal ulceration healed and the skin practically clear. Some pigmentation of the skin of the face was still present when she was seen in October.

Obviously no definite conclusion can be drawn from this case, but it is suggested that the use of BAL in the treatment of gold dermatitis is worthy of further trial.

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Ragan, C., and Boots, R. H. (1947). Ibid., **133**, 752.

A new pest in houses is reported by H. E. Hinton and A. W. McKenny-Hughes in the October *Monthly Bulletin* of the Ministry of Health and Public Health Laboratory Service. It is the New Zealand weevil, *Euophryum confine* Broun, which was first found in this country in 1937. It has now established itself "in a number of localities in houses as well as out of doors." The weevil leaves a thin outer layer of the wood intact except for exit holes. The interior of the wood is filled with a series of intercommunicating more or less parallel galleries, which are partly choked with dry powder consisting of the granular faeces of the larvae. The damage is remarkably like that done by *Lyctus*. The larvae seem to feed only in dead wood that is attacked by fungi.

Reviews

VASCULAR DISORDERS

Peripheral Vascular Diseases. By Edgar V. Allen, M.D., M.S., F.A.C.P., Nelson W. Barker, M.D., M.S., F.A.C.P., Edgar A. Hines, Jr., M.D., M.S., F.A.C.P., with Associates in the Mayo Clinic and Mayo Foundation. (Pp. 871; 386 illustrations, 7 in colour. 50s.) London: W. B. Saunders Company. 1946.

The authors of this magnificent study of peripheral vascular disease dedicate it to George Elgie Brown and in doing so pay a glowing tribute to his memory. Between 1921 and his untimely death in 1935 George Brown carried out pioneer work on vascular disease at the Mayo Clinic; he had planned this book as a record of his experience, and his friends have completed the work in a manner that must have satisfied even his high standards. The book is an excellent guide to the literature of peripheral vascular disease, for it is clear that the authors have taken great care in every section to collect the relevant facts about the history of the subject and to summarize the development of the opinions on pathology and treatment that are commonly accepted at present. But its usefulness is much enhanced by the numerous references to what has been learnt by experience at the Mayo Clinic. In short, it is a comprehensive work of reference enriched by the personal opinions of an experienced group of workers who have had access to a very large amount of clinical material. Brief biographical notes, with portraits, adorn the appropriate chapter-headings in homage to the pioneers in this field—Raynaud, Jonathan Hutchinson, Thomas Lewis, Weir Mitchell, Virchow, Matas, Buerger, Halsted, and Welch.

It is so long since attention was first drawn to many of these diseases that it seems remarkable that we should have had to wait till comparatively recently for any substantial advance in knowledge of their nature and treatment. On the other hand, perusal of this book makes it only too clear that there are still great tracts of unknown territory to be explored. There are full accounts in the early chapters of the special methods used to investigate vascular disease, and the authors add brief comments upon whether they have found the tests to be helpful or not in their own hands. It is interesting, for example, and rather surprising, to read that they have found oscillometry to be of little use—certainly of much less assistance than to several investigators in Britain. The authors describe diseases of the arteries in great detail, and refer to many instances of rare conditions which have occurred among the large numbers of patients attending the Clinic. We are interested to learn that two diseases which we see quite often are rarities to them—namely, primary thrombosis of the popliteal artery in young patients with otherwise healthy arteries, and erythrocyanosis frigida, which to them is so unimportant that it is grouped with other manifestations of pernio. It is strange to find that they classify erythema nodosum, erythema induratum, and disseminated lupus erythematosus as forms of arteritis, and it is not quite clear why they do so.

There is a masterly analysis of the whole problem of thrombophlebitis, with special reference to post-operative venous thrombosis; this section in itself makes the book a desirable acquisition for every general surgeon's library. The authors describe the rational basis for anticoagulant therapy in full, but condemn the ligation of veins for thrombophlebitis. In spite of intensive study no simple method has been discovered of successfully treating the oedematous ulcerated leg following deep thrombophlebitis. The volume ends with a comprehensive review of the inflammatory and non-inflammatory forms of lymphoedema, with experimental observations and clinical and pathological findings, as well as a brief but adequate and well-illustrated section on the operative surgery of peripheral vascular disease.

There is no doubt that this will be regarded as the standard book of reference on diseases of the peripheral blood and lymph vessels, and the authors are to be congratulated upon a production which is both a worthy memorial to George Brown and a credit to the present staff of the Mayo Clinic.

J. PATERSON ROSS.

SURGERY OF SOFT TISSUES

Surgical Treatment of the Soft Tissues. Supervising Editor, Frederic W. Bancroft, M.D., F.A.C.S. Associate Editor, George H. Humphreys, II, M.D., Sc.D., F.A.C.S. (Pp. 520; 244 illustrations. £4 10s.) Philadelphia and London: J. B. Lippincott Company.

Any work published under the supervision of a surgeon of Fred Bancroft's standing is bound to be interesting. Any surgeon could read this work with interest and occasional profit, but it is difficult to understand what place it is intended to fill or to what class of reader it is intended to appeal. The appearance of the cover suggests that it is one of a series on the whole of surgical treatment, but the selection of subjects in this volume is eclectic rather than comprehensive.

The book discusses cancer of the skin and breast at length, but not the surgery of sarcoma or the block dissection for glands in the neck. It describes the excision of branchial cysts and fistulae, but does not mention the thyroid gland. The book is chiefly on operative surgery, but there is a dissertation on chemotherapy which, though good in itself, is more suitable for a journal and already out of date. It should appeal to the post-graduate and experienced surgeon; but information on many of the more intricate operations on which they really need help is incorrect or incomplete. In the section on arteries, for instance, it discusses the technique of arterial suture with the aid of a number of pretty but quite misleading pictures, yet nowhere do the illustrations or the author reveal or even suggest that the key to arterial surgery is eversion of the intima. Indeed, some figures, if enlarged, might illustrate intestinal suture, and the author makes the remarkable statement that the Connell (inverting) suture can be used for arterial anastomosis. The section on ligation of arteries contains all the old textbook exposures and none of those of Fiolle and Delmas for the deeper vessels, on which every postgraduate would wish to be informed, while the advice to approach the innominate, subclavian, and vertebral arteries from the inner border of the sternomastoid without dislocating the clavicle or even dividing the scalenus anticus is positively dangerous. Like the curate's egg, the book is excellent in parts.

HENEAGE OGILVIE.

NAILING BONES

L'Ostéosynthèse au Clou. By R. Soeur. (Pp. 132; 134 figures. 325 francs.) Paris: Masson et Cie. 1946.

Intramedullary fixation of fractures of the shafts of long bones is not a new procedure. It has been practised sporadically since the early years of this century, but its value was limited because biologically inert metals such as are now available for internal splinting had not reached a satisfactory stage of development. During the recent war Küntscher in Germany, and to a less extent Lambrinudi and Burns in Britain, practised this method, and it now has an established, if limited, place in orthopaedic surgery.

In his monograph on the internal fixation of bones by nailing Dr. Soeur gives a full account of the present state of development of this method of fracture treatment, based on an experience of 74 cases. In the first half of the book he describes the indications for and technique of medullary nailing as applied to each of the principal long bones, and discusses its advantages and disadvantages in each case. The material in this section is well arranged; there is much of interest and much that will be new to many readers. The impression is inescapable, however, that the author's vigorous enthusiasm for the method has sometimes influenced his judgment when defining its indications and scope. Thus, he claims that intramedullary nailing is superior to other forms of internal fixation—and often to more conservative methods of treatment—for almost all the diaphysial fractures of the long bones. There will be disagreement here. Many readers will think that some at least of the cases which are described could have been treated as effectively, and possibly more simply, by other methods—sometimes even by non-operative methods. It is a dangerous policy (though one that is becoming too prevalent) to argue that a shortening of the stay in hospital or the achievement of earlier ambulation is in itself sufficient ground for advising *operative* treatment of fractures.

In the second part of the book the author discusses fractures of the neck of the femur, and he attempts to analyse the causes of non-union of intracapsular fractures. This problem has baffled surgeons and pathologists for many years and any new explanation must be seriously considered. Dr. Soeur's explanation, though of interest, is not at first sight convincing, and much further evidence is required before it can be completely accepted. It certainly does not justify his scathing and rather harsh denunciation of Pauwel's theories. Nevertheless, the book is well worth reading both for the information it contains and for the stimulus of the author's vigorously expressed ideas.

H. OSMOND CLARKE.

CHEST DISEASE

Diseases of the Chest. Diagnosis and Treatment. By Archibald Reynolds Judd. M.D., F.A.C.S. (Pp. 608; 140 illustrations, 1 in colour. $9.00.) Philadelphia: F. A. Davis Company (1914-16, Cherry Street). 1947.

Although this book purports to be a systematic manual of diseases of the chest there are some strange omissions from the list of contents. After 60 pages on the anatomy of the thorax and the physiology of respiration the author devotes 220 to pulmonary tuberculosis; of these, 66 are on diagnosis and pathology and the rest on treatment. The only sort of pneumonia that he discusses is the tularaemic variety. He does not mention asthma, and the discussion of pulmonary abscess and of bronchiectasis is sketchy. The standard of accuracy may be judged by the following quotation :

"Although the ductus arteriosus generally becomes obliterated after birth, it occasionally remains patent with the result that there is an excessive admixture of arterial and venous blood. The body becomes markedly cyanotic and life is threatened. The patient generally dies in infancy" (p. 31).

This error is repeated on p. 44, where the causes of anoxaemia are discussed as follows :

"They include inadequate ventilation of the lungs, insufficient available pulmonary parenchyma, reduced oxygen tension of the inspired air, or the blood may not be presented to the lungs for oxygenation as in patent ductus arteriosus."

Other examples of inaccurate or misleading statements are :

"Intrathoracic Pressures: Intrathoracic pressures refer generally to the pressure existing between the chest wall and the lungs, in other words to the intrapleural pressure, which is 4.5 to 5.0 mm. of Hg on expiration and 8.5 to 10 mm. of Hg on inspiration" (p. 45).

"Hydrogen Ion Concentration: Extensive experimentation has shown that there is a sensitivity of the breathing apparatus to changes in the *p*H of the blood. Increase in breathing rate may occur in the presence of either a shift to the acid or alkaline side of the normal *p*H level (*p*H = 7.35 to 9.35)" (p. 54).

Similar inaccuracies continue throughout the book. The literary style may be judged from the following quotation :

"The physiology of respiration and allied studies has been the subject of intensive study and research since thoracic surgery had its inception" (p. 39).

In a discussion of the technique of artificial pneumothorax induction :

"The site of the initial injection of air, if located over an area of normal lung, will aid in preventing the development of an empyema in the event that the visceral pleura is damaged" (p. 190).

"The treatment of bronchiectasis by active surgical methods, including phrenic nerve interruption, pneumothorax, oleothorax, thoracoplasty, and lobectomy, has been discarded with the exception of lobectomy" (p. 323).

On p. 440, in the course of a discussion of fungus diseases of the lung, a condensed classification of all plants from algae to flowering plants is labelled, "Table XIII. Outline of Phyla Group of Fungi," with the preamble :

"The following outline shows more clearly the intimate relationship between the forms in which we are chiefly interested."

The reviewer feels that these quotations will indicate his views on the book more clearly than any explicit statement that he would care to make.

J. G. SCADDING.

BOOKS RECEIVED

[*Review is not precluded by notice here of books recently received*]

Standard Methods of the Division of Laboratories and Research of the New York State Department of Health. By A. B. Wadsworth, M.D. 3rd ed. (Pp. 990. 55s.) London: Baillière, Tindall and Cox. 1947.

A detailed description of laboratory techniques for the examination of pathological materials, preparation of vaccines and sera, and laboratory administration.

Office Treatment of the Eye. By Elias Selinger, M.D. (Pp. 542. 43s.) Chicago: The Year Book Publishers, Inc. London: H. K. Lewis and Co. 1947.

An account of ophthalmological conditions that may be treated in the home, consulting room, or hospital out-patient department.

Annual Review of Biochemistry. Vol. XVI. Edited by J. Murray Luck *et al.* (Pp. 740 36s.) California: Annual Reviews, Inc. London: H. K. Lewis and Co. 1947.

Includes papers on the metabolism of proteins and amino-acids, the chemistry of the hormones, on folic acid, and on antimalarial drugs.

Aids to the Diagnosis and Treatment of Diseases of Children. By F. M. B. Allen, M.D., F.R.C.P. 8th ed. (Pp. 268. 6s.) London: Baillière, Tindall and Cox. 1947.

Includes new material on erythroblastosis, the sulphonamides, and penicillin.

Old People's Welfare. Published for the National Old People's Welfare Committee. 2nd ed. (Pp. 72. 1s. 6d.) London: The National Council of Social Service. 1947.

A guide to clubs, hobbies, housing schemes, and social services for the welfare of the old.

When You Are Old. Published by the B.M.A. (Pp. 33. 1s.) London. 1947.

An illustrated pamphlet for the layman based on the report entitled "The Care and Treatment of the Elderly and Infirm" by the special committee of the B.M.A.

Germany Revisited. By Victor Gollancz. (Pp. 39. 9d.) London: Victor Gollancz, Ltd. 1947.

An account of the author's visit to Germany in August of this year.

Surgery: A Textbook for Students. By C. A. Pannett, B.Sc., M.D., F.R.C.S. 2nd ed. (Pp. 769. 27s. 6d.) London: Hodder and Stoughton. 1947.

A short textbook of general surgery for medical students.

Headache. By L. G. Moench, M.D. (Pp. 207. $3.50 or 19s. 6d.) Chicago: The Year Book Publishers, Inc. London: H. K. Lewis and Co. 1947.

An account of the various causes of headache, and their treatment.

With Cradle and Clock. By Knud Stowman. (Pp. 224. 9s. 6d.) London: Hurst and Blackett. 1947.

A novel about an obstetrician in 18th century New York.

Experimental Physiology for Medical Students. By D. T. Harris, M.D., D.Sc., F.Inst.P. 4th ed. (Pp. 299. 18s.) London: J. and A. Churchill. 1947.

Describes simple laboratory experiments for students; many illustrations.

Guide to the Study of the Anatomy of the Shark, Necturus, and the Cat. By S. Eddy, C. P. Oliver, and J. P. Turner. 2nd ed. (Pp. 115. 12s.) New York: John Wiley and Sons, Inc. London: Chapman and Hall, Ltd. 1947.

A guide to the dissection of the dogfish shark, the mud puppy, and the cat.

Atlas of Outline Drawings for Vertebrate Anatomy. By S. Eddy, C. P. Oliver, and J. P. Turner. (102 plates. 12s.) New York: John Wiley and Sons, Inc. London: Chapman and Hall, Ltd. 1947.

An anatomical atlas to be used with the preceding book.

Recent Advances in Pathology. By Geoffrey Hadfield, M.D., F.R.C.P., and Lawrence P. Garrod, M.A., M.D., B.Ch., F.R.C.P. 5th ed. (Pp. 363. 21s.) London: J. and A. Churchill. 1947.

Includes new material on epidemic hepatitis, nephritis, experimental cancer research, antibody formation, and silicosis.

The Royal Family and Lieutenant Philip Mountbatten, R.N. [Dorothy Wilding

THE LOYAL ADDRESS OF THE BRITISH MEDICAL ASSOCIATION

We print below the loyal address of the British Medical Association to His Majesty the King on the occasion of the marriage of Her Royal Highness Princess Elizabeth to Lieutenant Philip Mountbatten, R.N., on November 20, 1947.

To the King's Most Excellent Majesty:

The Humble Address of the President and Members of the British Medical Association.

May It Please Your Majesty,

We, Your Majesty's dutiful and loyal subjects, the members of the British Medical Association distributed throughout Your Majesty's Commonwealth and Empire, humbly tender to Your Majesty, and to Her Most Gracious Majesty the Queen, Congratulations upon the Marriage of Her Royal Highness the Princess Elizabeth with Lieutenant Philip Mountbatten, R.N., which we fervently hope may be attended with every happiness.

We desire also to give expression to our fidelity and loyalty to the Throne and our hope that Your Majesty's beneficent reign may long continue.

Signed on behalf of the British Medical Association:

HUGH LETT, *President.*
H. GUY DAIN, *Chairman of Council.*
J. B. MILLER, *Chairman of Representative Body.*
JOHN W. BONE, *Treasurer.*

BRITISH MEDICAL JOURNAL

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THE ROYAL WEDDING

The medical profession has always been stoutly loyal to the Throne, a loyalty that was exemplified by the greatest of all British medical men, William Harvey, who remained with Charles I when he was besieged at Oxford. The Throne has responded to this feeling of loyalty by taking through the centuries a close concern in the problems and work of the medical profession. Henry VIII played a notable part in regulating the practice of medicine, in founding the Royal College of Physicians, and in bringing the Barbers and Surgeons together in one corporation. In recent history the Throne has endeared itself to medical men and women through more personal acts and trials. Queen Victoria set a courageous example when she received at the hands of John Snow chloroform during the birth of two of her children. Her son, Edward VII, uttered his famous aphorism about the prevention of tuberculosis, and his interest in medical work is commemorated in the King Edward VII Welsh National Memorial Association (for tuberculosis) and the King Edward's Hospital Fund. Perhaps, on its part, the medical profession has rarely felt more closely attached to the Throne than during the long and grave illness of King George V, cared for by a team of medical men working under that devoted and great doctor the late Viscount Dawson of Penn.

So it is with more than ordinary feelings of patriotism and loyalty that the medical profession of Great Britain and Northern Ireland now extend their respectful greetings to the heiress-presumptive to the Throne, Her Royal Highness Princess Elizabeth, on the occasion of her marriage to Lieutenant Philip Mountbatten, R.N.

The British Medical Association has presented to its Royal Patron, His Majesty the King, a loyal address in commemoration of the marriage of his daughter. The wording of the address is printed opposite this page. The address itself is illuminated on five pages of hand-made paper in full colours and gold, with the monogram of Princess Elizabeth and Lieutenant Philip Mountbatten and the device of the British Medical Association on the first two pages. The address is bound in padded blue Levant morocco bearing the device of the British Medical Association tooled in gold. The members of the British Medical Association are distributed throughout the Commonwealth and Empire, and so the Loyal Address thus humbly presented has more than a local and national significance. To the Nation's wishes for the happiness of the Royal couple we would add the special wish of the medical profession that they may long enjoy years of good health.

THE MINISTER POSTPONES DISCUSSION

After the *Journal* had gone to press last week the Negotiating Committee was informed that the Minister wished to postpone to Dec. 2 and 3 the meeting with it which he had agreed should be on Nov. 11 and 12. A printed slip conveying this information was inserted into copies of the *Journal* circulated in Britain. While we may understand that the Minister needs more time to consider the very many points that have been discussed with the officers of the Ministry by the various subcommittees of the Negotiating Committee the postponement will disappoint the medical profession, which, it is clear from our correspondence columns, is anxiously awaiting the results of the deliberations and is uneasy at the silence prevailing during the past few months. A small point, but perhaps not negligible, is the fact that, the date of the meeting having been agreed by the Minister of Health, the members of the Negotiating Committee, who come from different parts of the country, had already made arrangements for their work to be done this week so that they could attend the meeting in London. The points brought forward for discussion by the six subcommittees of the Negotiating Committee have ranged over a wide field, and the Minister has presumably been kept informed by his officers of the nature of these discussions during the past few months. In order to avoid any ambiguity in the matter the Negotiating Committee drew up a carefully considered statement on the discussions so that the Minister could have this as well as the account provided by his own officers. The Negotiating Committee's statement and the Minister's reply will be published in the *Journal* as soon as the latter is received.

Dr. H. Guy Dain, Chairman of Council of the B.M.A., made a short but important statement at the meeting of the Panel Conference on Oct. 30, which was reported in the Supplement of the *Journal* of Nov. 8. In this speech he drew attention to some of the matters to which the Negotiating Committee had given much thought. He pointed out that the Minister had accepted the terms upon which it had been agreed to enter discussions—namely, that

the possibility of an amending Act should not be ruled out. Dr. Dain referred in particular to the obscurities of Section 35 of the Act relating to partnership agreements. In his own words "Section 35 of the Act is entirely unworkable." The Minister may agree that this Section can be made workable only by amendment. Another matter referred to by Dr. Dain was the buying and selling of practices, and the fact that he referred in particular to this problem suggests that the interpretation of the Act in relation to this is one which offers some difficulty to the Ministry of Health as well as much concern to the medical profession. Another matter of grave concern to general practitioners is the method of remuneration in the new National Health Service. Is this to be by capitation fee alone, or by capitation fee plus basic salary? This question is itself linked with the buying and selling of practices and the method of securing an even distribution of medical skill throughout the country. With this, too, is bound up the question of what is euphemistically described as negative direction.

Dr. Dain concluded his speech by assuring the Panel Conference that there had been no departure from the principles for which they stood. He referred to the forbearance of the profession in the months during which they had been unable to receive any information. The silent period is now coming to an end, and the next phase of events will soon be upon us. If the Minister of Health finds it impossible to reach a compromise on matters which the medical profession considers to be fundamental, then by further discussion and plebiscite medical men and women will have to decide what action to take. The plea for unity has been made often enough in these columns, but even though the plea now tends to become commonplace we would make it once more, because if the profession is divided against itself then the Minister of Health will have his way. But if the medical profession can sink what are in effect small, but at times irritating, differences of opinion, and can be united in its adherence to those principles which it knows are fundamental to the good of the profession and so to the good of the public, then the final outcome cannot remain in doubt.

RISKS OF RADIOACTIVE ISOTOPES

Probably the most important influence that the recent developments in nuclear physics will ultimately have on medicine will result from using isotopic tracers, both radioactive and non-radioactive, in research. The first occasion when radioactive isotopic indicators were used in medicine appears to have been the investigation, published in 1924 by Christiansen and others,[1] into the absorption, distribution, and excretion of bismuth in the treatment of syphilis. Informative accounts of the use of radioactive and stable tracers were published in 1946 by Hevesy[2] and by Rittenberg and Shemin.[3] Dr. A. S. McFarlane in an interesting review in this week's *Journal* (p. 766) calls attention to two important facts about the use of tracers in clinical investigations—namely, the complete safety of non-radioactive tracers and the need for caution in the use of radioactive tracers. However, as he says, "in the case of the radioactive tracers it is possible to employ such low concentrations that most human experiments can be carried out with safety."

The risks of administering internally any radioactive substance must be carefully studied and estimated in each case, especially in connexion with the therapeutic applications of isotopes such as radiophosphorus and radio-iodine. Mitchell has recently reviewed[4] the possible uses of radiophosphorus in treatment. In a subsequent review[5] the same writer emphasized the importance of avoiding the possible danger of carcinogenesis which might result from the introduction of radioactive materials, including radio-iodine, into the body. During the last year it has become possible to estimate provisionally the therapeutic value of the few radioactive isotopes whose use depends upon their being selectively concentrated by the malignant cells, which are killed or damaged by the radiations. It is now evident, mainly from American work, that radiophosphorus,[6-9] and to less extent the radio-iodines,[10-15] may justifiably be given internally as therapeutic agents in suitable cases.

Radiophosphorus (P^{32}) has a half-life of 14.3 days and emits only beta particles, whose average energy is approximately 0.70 mev. It is usually administered intravenously in the form of isotonic Na_2HPO_4 solution containing initially about 300 microcuries of P^{32} in 15–18 mg. of anhydrous Na_2HPO_4 per ml. It can also be given by mouth, and it is then often assumed that 75% is absorbed. The clinical dosage of P^{32} has necessarily been decided on empirical grounds, and it is desirable to correlate it with the roentgen unit. It has been shown that 1 microcurie of P^{32} per gramme of tissue delivers a dose of 43 r. in 24 hours.[16] It is also important to know the differential absorption ratio—that is, the ratio of the concentration of the isotope in a particular tissue to the average concentration in the body as a whole.

Radiophosphorus has been used in the treatment of patients since 1936. The only disease in which it has yet been found to give better results than *x*-ray treatment is polycythaemia vera; it is probably the best therapeutic agent available for this condition, though general medical measures must not be omitted. In chronic myeloid and chronic lymphatic leukaemia its effects and its limitations are probably similar to those of *x*-ray therapy. In most cases of lymphosarcoma radiophosphorus is probably less

1 *C. r. Acad. Sci.*, Paris, 1924, **178**, 1324; ibid., **179**, 241; quoted by G. de Hevesy, Nobel Lecture, 1946, Norstedt, Stockholm.

2 Nobel Lecture, 1946, Norstedt, Stockholm.

3 "Isotope Technique in the Study of Intermediary Metabolism," in *Currents in Biochemical Research*, edited by D. E. Green, New York, 1946.

4 *British Medical Journal*, 1947, **1**, 250.

5 *Brit. J. Cancer*, 1947, **1**, 1.

6 Low-Beer, B. V. A., Lawrence, J. H., and Stone, R. S., *Radiology*, 1942, **39**, 573.

7 Kenney, J. M., *Cancer Res.*, 1942, **2**, 130.

8 Reinhard, E. H., *et al.*, *J. Lab. clin. Med.*, 1946, **31**, 107.

9 Doan, C. A., *et al.*, ibid., 1947, **32**, 943.

10 Chapman, E. M., and Evans, R. D., *J. Amer. med. Ass.*, 1946, **131**, 86.

11 Hertz, S., and Roberts, A., ibid., **131**, 81.

12 Leucutia, T., *Amer. J. Roentgen.*, 1946, **56**, 90.

13 Seidlin, S. M., Marinelli, L. D., and Oshry, E., *J. Amer. med. Ass.*, 1946, **132**, 838.

14 Leiter, L., Seidlin, S. M., Marinelli, L. D., and Baumann, E. J., *J. clin. Endocrinol.*, 1946, **6**, 247.

15 Means, J. H., *Ann. intern. Med.*, 1946, **25**, 403.

16 Marinelli, L. D., *Amer. J. Roentgen.*, 1942, **47**, 210 (cp. Marinelli, L. D., Brinckerhoff, R. F., and Hine, G. J., *Rev. Mod. Phys.*, 1947, **19**, 25, for similar calculations for other isotopes).

beneficial than *x* rays. It is useless in acute leukaemias, Hodgkin's disease, and cancers generally. Whenever radiophosphorus is administered internally as inorganic phosphate its effects on the normal tissues must be considered, especially on the reproductive organs, the bone-marrow, the lymphoid tissue, and, when the expectation of life is considerable, the kidneys. It must be emphasized that all proliferating cells, both normal and malignant, concentrate the radiophosphorus by utilizing it as inorganic phosphate in the synthesis of complex compounds, including ribonucleic and thymonucleic acids.

These dangers are not hypothetical. Recently Platt, of St. Louis, has described[17] the histological changes produced in the organs of patients treated with radiophosphorus. In this series of 43 cases the diagnoses were: acute leukaemia, 4; chronic leukaemia, 21; leukosarcoma, 9; aleukaemic leukaemia, 1; Hodgkin's disease, 2; multiple myeloma, 3; lymphosarcoma, 1; melanoma, 1; and Ewing's tumour of bone, 1. In general the histological changes were similar to those caused by external radiation. Striking changes were of course found in the bone-marrow, lymph nodes, and spleen, although this organ was never reduced in size. Significant renal changes were observed and "can probably be attributed to the concentration that occurs in the nephron during the process of filtration and reabsorption." Minor histological changes that were probably radiation effects were also described in the brain, skin, oesophagus, gastro-intestinal tract, pituitary gland, adrenal cortex, lungs, and bones. "Finally, serious consideration must be given to the changes in the testes and ovaries of patients who are in the reproductive period of life. Observation of these organs confirms the possibility that spermatogenesis and oogenesis may decrease or disappear, with development of sterility in young persons given radiophosphorus."

In addition, as Dr. R. McWhirter points out (see p. 783), the question whether genes may be altered by radiophosphorus used in treating patients during the reproductive period of life must be considered. There is unfortunately little evidence on this subject. While it is possible to calculate the dosage of radiophosphorus which can be expected to deliver to the testis or ovary a dose of radiation not exceeding the "tolerance dose" of 0.1 r. (or, probably better, 0.05 r.) per day, it must be emphasized that there is almost no direct evidence from biological experiments with which to support such calculations. Another risk that may arise from the use of radiophosphorus in patients with a long expectation of life is that of late carcinogenesis—that is, the induction of leukaemias and bone sarcomas after a latent period of at least five years and probably much longer. We have no evidence on this subject, and clinical trials of P^{32} have almost certainly not been carried out for long enough to reveal whether this occurs or not. Nevertheless, we may expect radiophosphorus to have a weak carcinogenic action. We conclude that in the present state of knowledge it is in general unwise to use radiophosphorus to treat patients who are in the reproductive period of life or who have an expectation of life of five years or more.

[17] *Arch. Pathol.*, 1947, **43**, 1.

PRICKLY HEAT AND TROPICAL ASTHENIA

Prickly heat or miliaria is a perpetual source of irritation and annoyance to the white man in tropical climates, and among the many remedies recommended there are none that receive much praise. Prickly heat presents a fine, superficial, vesicular eruption and erythema related to the sweat ducts, is readily evoked by exercise, and is associated with intense itching. It affects especially those parts of the skin which are normally covered, is aggravated by friction, and may last from a few days to a few weeks according to the severity of the attack. Numerous theories relating to diet, salt and water metabolism, and infection have been put forward to explain the disease, but none has proved satisfactory or established a basis for treatment. The late E. C. Smith,[1] of Lagos, cultured a monilia from the skin of patients suffering from prickly heat and claimed to have reproduced the disease in normal subjects by inoculation with these cultures.

Recently J. P. O'Brien[2] has made an exhaustive histological study of the disease and brings forward strong evidence to support the view that it results from the degreasing effects of the "civilized toilet" of the white man in relation to clothes, washing, the use of soaps, powders, and lotions, and the application of alcohol to harden and protect the skin from bites. The effect is to deprive the skin of its sebaceous secretion, with the result that a keratin ring closes the orifice of the sweat duct and a vesicle of sweat collects in the upper epidermis and provokes a secondary reaction. If an area of skin is smeared with anhydrous lanolin this horny occlusion is prevented, and exercise will now provoke profuse sweating over this area but no vesicular eruption; O'Brien calls this "the lipoid response." He suggests that a similar procedure in relation to the pilo-sebaceous orifices is responsible for acne and folliculitis, which are so often aggravated in the Tropics. In prickly heat a secondary parakeratotic reaction and plug-formation occurs beneath the vesicle and causes disintegration of the duct with obstruction to the flow of sweat, which then permeates into the tissues and may give rise to a vesicular reaction deeper than that of prickly heat and not accompanied by itching. This accounts for the persistent tropical anidrosis which follows prickly heat and may be associated with eczematous and sometimes exfoliative dermatitis due to the irritation of the extravasated sweat. Involvement of half the sweat glands of the body will impair adaptation to tropical conditions; involvement of two-thirds of the glands, O'Brien suggests, leads to severe impairment and asthenia. The asthenia is caused partly by pyrexia from interference with heat loss by sweat evaporation, and partly by the metabolic effects of the reabsorption of extravasated sweat.

O'Brien's histological studies and the results of his experimental investigation of 20 normal subjects appear to confirm his hypothesis. It should be easy to conduct a clinical experiment over a wide field and confirm or refute his findings. Natural cure results from exfoliation of the keratin plugs, and painting with 10% salicylic acid in alcohol for two to four days will cause effective peeling; the subsequent use of lanolin prevents relapses. For prophylaxis he advises loose, brief clothing washed daily, and inunction of the body with lanolin once a week. Soap should be used only once a day, hot water should be avoided, and powders should be applied only to the axillae, groins, and feet.

[1] *Atlas of Skin Diseases in the Tropics*, 1932. London: Bale. (Plates XXV to XXVII.)
[2] *Brit. J. Derm.*, 1947, **59**, 125.

"VISCOSE" HAZARDS

Since the first artificial silk fibres were made from nitrocellulose by Chardonnet in 1890 the world's production has assumed a formidable tonnage, more than 65,000 tons in Great Britain and 334,000 in the United States in 1944. Of the various processes in operation, the "viscose" method is still the most widely used, accounting in 1941 for 89% of the world production, though the nylon process has rapidly become popular, especially in America, since 1939.

The health hazards associated with the manufacture of artificial fibre are greatest in the viscose process, owing chiefly to the use of carbon disulphide as the agent for transforming alkalized wood-cellulose into cellulose xanthate. This orange, syrupy, xanthate solution is "viscose," which after maturation and filtration is forced through spinnerets into an acid-saline coagulating bath from which emerge the precipitated filaments. During the spinning operation both CS_2 and H_2S are liberated, and the higher the temperature of the spinning bath the higher the concentration in the air around the spin packages and the more important the ventilation of the machine.[1] Severe symptoms may follow continuous exposure to 30 to 40 parts per million of CS_2 in the atmosphere, and the American Standards Association in 1941 set the maximum allowable concentration at 20 parts per million for a daily exposure of eight hours.

The provision and maintenance of efficient general ventilation of the workrooms is required in this country by the 1937 Factories Act, and the dangers of poisoning from inhalation and of the vesicant action of CS_2 on the skin have to some extent been overcome by complete enclosure—in a closed circuit—of those operations in which CS_2 is used.

In France[2] there has been a steady fall in the number of cases of fatal CS_2 poisoning from 252 in 1942, and 166 in 1943, to 66 in 1944 and 62 in 1945, with a corresponding decrease in the number of serious though not fatal cases. Severe cases do still occur, however, and the most serious of all manifestations of poisoning—psychosis—was shown by six out of 100 cases reported in Italy[3] in 1946. In severe chronic poisoning, Parkinsonism, multiple sclerosis, polyneuritis, and muscular atrophy are some of the results of the toxic action of carbon disulphide on all nervous structures. Eye lesions due to affection of the optic nerve, the papilla, and the retina, and also kerato-conjunctivitis, still constitute a considerable problem; 600 cases were observed in France in 1945. The prevention of all these toxic effects involves not only the engineering and hygienic measures already legally enforceable, but also the constant medical supervision and selection of workers in the artificial textile industry, and insistence that they take advantage of the protective clothing and equipment placed at their disposal.

LIVER FUNCTION AND THYROTOXICOSIS

During recent years it has been increasingly recognized that in thyrotoxicosis, and more particularly in diffuse toxic goitre, the functions of the liver are frequently impaired. The hippuric-acid excretion and galactose tolerance tests are often abnormal in this condition, so that apart from its action in antagonizing the effects of the thyroid hormone the use of insulin with glucose in Graves's disease is further indicated because of its therapeutic effect on the liver. A. W. Elmer[1] considers that the liver plays an important part in destroying the thyroid hormone, and that conditions in which there is increased thyroid secretion are aggravated by the decreased detoxication of thyroxine associated with liver damage. It does seem probable that many of the apparent anomalies of sugar metabolism and gastro-intestinal function commonly met with in cases of thyrotoxicosis should be ascribed to a disordered liver rather than directly to thyroid dysfunction.

A recent paper by Eli Moschowitz[2] throws further light on the mechanism of these changes in the liver. Moschowitz does not accept the view of F. H. Mills[3] and others that focal necrosis is a common finding, but he does agree that the formation of blood lakes is the primary histological disturbance. In his opinion these focal haemorrhages lead to fibrotic changes in the interlobular or portal spaces. While distinguishing the final picture from Laennec's cirrhosis and from changes due to back pressure, he puts forward the suggestion that thyrotoxic cirrhosis, like that found in cardiac disorders, is due primarily to a circulatory upset. His contention, borne out by experimental evidence and excellent slides and diagrams, is that in hyperthyroidism the increased blood volume and the greater velocity of the blood flow through the hepatic artery cause a breakdown in the normal mechanism whereby the systemic pressure is adjusted to the lower pressure in the portal veins. Decompensation results in the formation of static blood lakes leading to fibrosis and finally to a fully established cirrhosis.

The analogy between this condition and that of chronic hepatic venous congestion is obvious, but the latter is to be regarded as an engorgement due to backward failure, while cirrhosis in a case of diffuse toxic goitre is the consequence of forward failure. In the cirrhosis of cardiac failure the sclerotic changes are seen around the central hepatic vein; in the case of toxic goitre they are found in the interlobular area and more markedly in the subcapsular zone.

Moschowitz does not accept the idea of a common toxic factor attacking both liver and thyroid. Alterations of similar type can be produced in the liver in experimental hyperthyroidism, where no toxin is involved, so his contention that the pathology rests on changes in haemodynamic appears to be reasonable. This is a most interesting paper, with numerous references and a good historical survey, and since it would seem possible that similar vascular disturbances may play a part in some forms of renal and pulmonary disease the theory put forward merits careful consideration. Purely from the clinical standpoint it serves as yet another reminder that in treating cases of diffuse toxic goitre the state of the liver should always receive due consideration.

BRUCELLA INFECTION IN LABORATORY WORKERS

Brucella melitensis is a dangerous organism to handle in the laboratory. Early reports of infections in England and Malta directly traced to routine work or research with organisms of the brucella group were followed by accounts of similar accidents in many laboratories in Continental countries, and recently Meyer and Eddie[4] collected details of 74 cases from 17 institutions in the U.S.A. The victims

1 Cook, W. H., *Industr. Med.*, 1945, **14**, 936.
2 Aufiret, J., *Arch. Mal. Prof.*, 1946, **7**, 181.
3 Vigliani, E. C., *Med. d. Lavoro*, 1946, **37**, 165.

1 *New Engl. J. Med.*, 1939, **221**, 927.
2 *Arch. intern. Med.*, 1946, **78**, 497.
3 *Med. J. Austral.*, 1942, **1**, 195.
4 *J. infect. Dis.*, 1941, **68**, 24.

are usually bacteriologists, pathologists, or technicians handling specimens or cultures, but the list includes animal caretakers, persons cleaning glassware, porters, and maintenance staff. Infection is usually due to some failure of technique, and one of the greatest dangers is thought to be the preparation of bacterial suspensions, an opinion which can readily be believed by those who have seen the high-speed flash photographs by Johansson and Ferris[5] of droplet-sprays produced by pipetting operations. Faulty methods for dealing with discarded cultures may be a source of danger, and the possibility of dust-borne infection must not be overlooked.

A recent description by Howe[6] and his colleagues of the occurrence of laboratory infections in seventeen young research workers at Camp Detrick, Maryland, is of considerable interest because of the unusual opportunities of obtaining data before infection and during the course of illness. The types of disease produced by the two infecting organisms, *Br. melitensis* and *Br. suis*, were not clinically distinguishable. It is likely that the risk of serious infection with *Br. abortus* is rather less than with the other species.

The constant features of the illness, which became established after a prodromal period of less than a week, were acute, moderately severe fever of irregularly intermittent type, marked fatigue, headache, and dull intermittent pains in the muscles and joints. Rigors, gastro-intestinal disturbance, and photophobia were not infrequent. The febrile episodes ranged from one to five, with two as the most usual number. There were no useful physical signs, and diagnosis was made by blood culture and the agglutination test. A curious observation was the frequent occurrence, some time after the onset, of erythema and oedema at the site of previous brucella skin tests and vaccinations. Illness was usually followed by a long period of lassitude and incapacity, of the same order as that reported by Meyer and Eddie, whose figures show a duration of over three months in half of their cases and of two to ten years in six cases. Treatment with sulphadiazine (alone and with penicillin) and with streptomycin produced little or no clinical evidence of benefit.

A safe and effective immunizing agent would be of great value. In view of veterinary experience it is not to be expected that brucella vaccines killed by heat or chemicals would be efficacious, and attempts to protect monkeys against *Br. melitensis* by live vaccines of *Br. abortus* have not met with success. All the patients in the Camp Detrick series had previously received a brucella vaccine the nature of which is not stated. In our present state of knowledge measures for prevention of these laboratory infections, which carry such a risk of physical and economic disability, must comprise the use of rubber gloves, scrupulous attention to technique, and measures for the control of dust-borne and droplet infection, including masks and possibly special inoculating boxes such as have been used for work with rickettsiae.

[5] *J. infect. Dis.*, 1946, **78**, 238.
[6] *New Engl. J. Med.*, 1947, **236**, 741.

SUBNORMAL INTELLIGENCE

Follow-up studies are perhaps one of the most valuable methods of investigation we have, although in the realm of child psychiatry they are all too few. It is unusual for the child psychiatrist to see his patients again after they reach the age of sixteen, so that in the ordinary course of his practice he does not learn the significance for adult life of the psychological deviations of childhood. For this reason an investigation in Stockholm of the after-history of children educated in special schools for the retarded is of unusual interest.

Dr. Ramer[1] began with 389 boys and 237 girls, born between 1905 and 1917, who received special education of this type. They were compared with an almost equal number of boys and girls, born during the same years who had been taught in normal classes. By using every form of social agency he was able to follow their careers up to the ages of 26–35. The special-class students had an average intelligence quotient of 78 for the males and 77 for the females. Those who could be retested in adult life showed no change in their intelligence. This finding emphasizes the empty optimism of the term "mental retardation." In this section of the population—estimated to be 2–3% of the whole—the growth of intelligence is not so much "retarded" as limited from the beginning. The parents of the special-class pupils were of a lower occupational standard than those of the control group, and financial standards were also lower. In these children focal abnormalities were common: defective sight was present in 13%, defective hearing in 12%, and there were other neurological signs in 6%. Even at these early ages in the males mortality was higher than in the control group. Sexual adjustment also differed; at the time of the inquiry 50% of the special group were married, as against 64% of the control group, and the divorce rate was two-and-a-half times as great. Significantly fewer of the special group were employed on skilled work.

Figures relating to the receipt of public relief are also interesting. In the special group nearly two-fifths of the males and one-third of the females had been in receipt of relief, as against one-fifth of the males and one-eighth of the females in the control group. The rates for admission to mental hospitals were considerably higher in the special than in the control group, but the difference is almost exclusively made up by admissions for imbecility; there was also a somewhat higher incidence of schizophrenia, but the numbers are small. There is no strong evidence that the subnormal in intelligence are specially liable to the psychoses. Neither, surprisingly, do they seem to be specially liable to convictions for crime, vagrancy, and inebriety. The chances of being sentenced for a criminal offence before the age of 35 were exactly the same in the two groups. Nevertheless, those of the special-class students who had been marked by their teachers as "moody," and still more those who had a school record of truancy or pilfering, had criminal records, respectively, twice and four times as high as in the control group. There was no difference in the types of crime, and crimes of violence were rare in both groups.

These findings are of considerable interest, and to some extent run counter to those of previous workers. They suggest that the defects of the intellectually subnormal are largely limited to the field of intelligence, and that they should not be regarded as necessarily inferior in temperament and character.

[1] Ramer, T., *Acta psychiat. neurol.*, 1946, Suppt. 41.

Dr. E. R. Boland, F.R.C.P., will deliver the Croonian Lectures on "The Administration of Medicine" before the Royal College of Physicians of London (Pall Mall East, S.W.) on Tuesday, Nov. 18, and Thursday, Nov. 20, at 5 p.m.

The next session of the General Medical Council will open on Tuesday, Nov. 25, at 2 p.m., when the President, Sir Herbert Lightfoot Eason, will take the chair.

THE HEALTH OF AUTHORS

THE LLOYD ROBERTS LECTURE

Before the Royal College of Physicians on Nov. 11 Mr. Harold Nicolson gave the Lloyd Roberts Lecture for 1947 on the health of authors. In this lecture, he said, he would be more concerned with the mental health of authors and with that form of nervous activity which enabled its possessor to receive "intimation" and "inspiration." He restricted himself to those writers who could justly be called creative.

Bodily Health

Mr. Nicolson dealt with the popular fallacy that creative writers, and especially poets, were of weak bodily constitution and as such liable to premature death. He admitted that in the 19th century a high proportion of creative geniuses succumbed to tuberculosis, and mentioned the names of Keats and the Brontës. Yet examination of the mortality statistics of eminent writers did not show that their bodily, as distinct from their mental, health was any less than that of their illiterate contemporaries. The thirty-two most famous British poets who flourished between the middle of the 14th century and the end of the 19th century were remarkable for their longevity. Of these thirty-two, ten lived beyond the age of 70, nine died between the ages of 60 and 70, seven between the ages of 50 and 60, two between the ages of 40 and 50, and four under the age of 40. Many of these great poets did not take that care of their health recommended by their medical advisers. Ben Jonson and Michael Drayton were of a convivial disposition, yet the former lived to the age of 65, and the latter to the age of 68. "Herrick and Marvell were not particularly austere, yet each of them lived to over 70. Swift and Dr. Johnson during their lifetime were tortured with the dread of premature decay, yet Swift retained his bodily health at least until the age of 77, and Johnson was 75 at the time of his death. Tennyson again, who during his middle life was a confirmed hypochondriac, lived to the venerable age of 83; and Swinburne, whose early manhood was not distinguished by any pronounced asceticism, lingered on at Putney until his 74th year." Of the "four mighty poets" who suffered an untimely death, Keats died of consumption in Rome at the age of 26, but the deaths of Marlowe and Shelley were due to accident. The fourth of these poets, Byron, died from an accident at the age of 36. Mr. Nicolson dealt with the allegation that Byron might have survived to old age had it not been for the incompetence of the local doctors at Missolonghi. According to the accepted story Byron died of rheumatic fever brought on by rowing in an open boat across the lagoon after being heated by riding and drenched by a thunderstorm. His doctors were accused of failing to diagnose the illness, and of having bled him to death. Mr. Nicolson said he had made a special study of Byron's last illness, and, according to the experts he had consulted, Byron's final illness must have been either typhoid or "pernicious malaria."

Mr. Nicolson concluded that the bodily health of authors was as sound as that of any other calling.

Mental Health of Authors

There was, he continued, a theory that there was some special connexion between literary genius and mental derangement. It was true that a few creative writers had in their later years become demonstrably insane ". . . but it is not in the least true that *all* creative writers have been mad *all* the time." As authorities for "this distressing theory" Mr. Nicolson quoted Plato, Burton, Shakespeare, Dryden, Macaulay, and Lamartine, who spoke of "that mental malady which men call genius." Writers were themselves largely to blame if the general public regarded them as unbalanced. "In their lack of reticence, in their self-conscious habit of examining their nerves in public, it is they, rather than the outsiders, who have created the legend of their instability." As an example of the length to which a legend could be pushed Mr. Nicolson referred to Mr. J. F. Nisbet's book entitled *The Insanity of Genius* published in 1891, and he quoted this passage from it: "Genius, insanity, idiocy, scrofula, rickets, gout, consumption, and other members of the neuropathetic family of disorders, are so many different expressions of a common evil—an instability, or want of equilibrium, in the nervous system."

Mr. Nicolson then went on to examine the evidence. Of the thirty-two famous British poets whose longevity he had commended only two became demonstrably insane. Swift, he said, was haunted by the spectre of insanity all his life; yet in fact he lived to the age of 77, and it was only in the last three years of his life that his intellect became clouded. William Cowper was the subject of recurrent fits of melancholia and suicidal mania from his 21st year; but he enjoyed long interludes of perfect sanity. Dr. Johnson, Mr. Nicolson observed, might be regarded as a borderline case. He suffered at times from auditory hallucinations, and had a dread of insanity. "He entrusted his secret to Mrs. Thrale, and whenever he felt that madness was approaching, he would persuade her to lock him in his room and it seems to place gyves upon his legs, and even to whip him with a rod." Johnson died of asthma and dropsy at the age of 75. As another case Mr. Nicolson instanced that of Southey, whose mind became clouded in his 70th year, twelve months before his death.

Eccentricity

Mr. Nicolson concluded, then, that the legend of mental illness among creative writers was to a large extent the fault of the writers themselves. "All writers, and especially all poets, feel it dull to be thought completely normal. They thus divulge and even display their eccentricities." He gave Shelley as an example and described him "as on the whole a sane and normal person." The eccentricity of Shelley took two forms. "In the first place he was a hypochondriac. All creative writers are hypochondriacs, since those of them who do not worry about the state of their bodies are certain to worry about the state of their minds." Mr. Nicolson described how on one occasion Shelley found himself in a crowded stage-coach opposite a lady with unusually distended legs. He had just been reading a book in which there was a description of elephantiasis. Shelley concluded that the disease must be contagious and that he had caught it from the lady in the coach, a delusion which persisted for several weeks. Shelley's other eccentricity was that of "spectral and auditory hallucinations." On one occasion he saw a baby rise from the sea and clap his hands at him. One could account for these departures from reality, Mr. Nicolson said, only by considering in what manner creative writers were inspired. "Inspiration is a sudden flash or fusion between sense and fantasy, between reason and imagination." The illusions or hallucinations of creative writers were merely the tricks which a strong imagination was all too apt to play.

Temperament

It would be an error to regard all authors or even all creative writers as constituting a uniform category or type. They displayed an astonishing diversity, even in their methods, their hours of work, and their habits. Some writers, such as Wordsworth, could only bring their work to completion "by agonized plodding along a single road." Others preferred a variation of theme. Jane Austen, for example, kept *Sense and Sensibility, Pride and Prejudice,* and *Mansfield Park* in various stages of completion and would pass from one to the other. Thackeray found that his ideas flowed more freely in the "congested, if somnolent, atmosphere of the Athenaeum Club." Byron could work well only at night. Voltaire did most of his dictating from his bed. Victo Hugo composed some of his loveliest lyrics when sitting on top of a bus. Milton said that he could write really well only between October and March. Tennyson was more often inspired during the spring and summer. "Schiller found it necessary to stimulate his unconscious by keeping rotten apples in the drawer of his writing-table." Mr. Nicolson quoted these divergences to indicate that if there was such a thing as the literary temperament it assumed the most diverse forms.

Inspiration

If there were divergences in the practice of writing, there was general agreement among authors on the nature of inspiration. "Almost all writers who have ventured to express views upon this intricate matter are agreed that inspiration is an event which has no apparent connexion with conscious thought." "It comes," said Thomas Gray, "as the maggot bites." Inspiration was not only extraneous to the person, but was irresistible. "Almost universal also," Mr. Nicolson said, "is the sense of loneliness, abandonment, failure, and pathet

incompetence which assails creative writers when the fleeting intimation has passed by." And so some of them to recapture inspiration resorted to stimulants, opiates, or narcotics. Others relied upon what Mr. Graham Wallas had called "unconscious cerebration." Mr. Nicolson said that it was doubtless with the idea of the value of unconscious cerebration that the late Lord Balfour used to recommend to those of his staff suffering from overwork a three-days course of detective novels and champagne.

Conclusion

Mr. Nicolson therefore concluded that so far as bodily health was concerned the author was neither more nor less healthy than any other sedentary individual. The creative writer, however, possessed "a certain special nervous sensibility." Genius was neither "a great aptitude for patience" nor "a transcendent capacity for taking trouble." Genius, said Mr. Nicolson, was "a spontaneous activity of the cells and fibres of the brain whereby new combinations of impressions are constantly being formed." Yet there was during moments of inspiration "some flooding of the conscious by the subconscious, and therefore some dissociation from reality." All authors were not of the same value or endowed with comparable talents. At the bottom of the scale there were those who with a certain capacity for observation and narration could notice and annotate the world around them. "Such writers are as happy and unperturbed as water-beetles jerking with long prehensile legs along the surface of the village pond"; and of those in the higher scale Mr. Nicolson said this: "Raised above all others, living in a rarefied ether of their own, confused by the eternal dissonance between the ideal and the real, the mighty poets are a race apart. For them imagination is no happy mood but a superb and agonized bewilderment. Not for them are the tiny pleasures, the small disappointments, the trivial success and failure, of the lesser breeds. The God visits them, not amicably, but in a flash of flame and fire; and in the after vacancy they know that they have caught but a momentary glimpse of Intimation: their triumph is clouded by the knowledge that their illumination has been so narrow and so short."

CHLOROFORM ANAESTHESIA

EDINBURGH CENTENARY CELEBRATIONS

To commemorate the centenary of Sir James Young Simpson's discovery of chloroform anaesthesia celebration ceremonies were arranged on Nov. 4 by the University of Edinburgh.

At a scientific session in the morning Dr. D. S. Middleton (Edinburgh) said that there was still a place for chloroform in special circumstances. As officer in charge of anaesthetics when a prisoner of war in Singapore, he had found that chloroform, used extensively and in difficult circumstances, was a safe agent within reasonable limits and if administered according to proper instructions. Points to note were the use of pre-operative atropine, the maintenance of a clear airway, adequate oxygenation, and avoidance of sudden changes in concentration. The depth of anaesthesia and the dosage required should depend on clinical appreciation and not on dials. Considering the appalling conditions of malnutrition and disease the fact that hundreds of operations were performed under chloroform anaesthesia alone, with very few fatalities, was a tribute to the safety of the drug in careful hands.

Prof. R. R. Macintosh (Oxford), in a paper on dosimetric apparatus for the administration of chloroform, reviewed the physical principles involved in the design of an inhaler to deliver a known concentration of chloroform vapour. Illustrated by lantern slides, the designs of various inhalers were discussed, ranging through the century from those of Snow, Clover, Waller, Goodman Levy, Marston, and Vernon Harcourt to the modern "E.S.O." (Epstein, Suffolk, Oxford) produced during the war for use by paratroops to supplement thiopentone. This apparatus was of strong compact design, constructed to deliver a known concentration of chloroform vapour at any temperature, whether in the Arctic or the Tropics. Although the use of chloroform was now limited, in special circumstances, as in a London "blitz," it was invaluable. For the future assessment of an anaesthetic the dosage and vapour concentration must be accurately known; too often a drug was blamed for failure, and not careless or inexpert administration.

Dr. John Gillies (Edinburgh) presented a statistical analysis of the present-day use of choloroform, based on replies to a questionary sent to a large number of general practitioners in Scotland (all qualified at least seven years), and to specialist anaesthetists in this country and abroad. There were still a number of adherents to chloroform as an anaesthetic in general practice, particularly in obstetrics. Of 865 replies received from practitioners 94% favoured chloroform during labour. One point of interest noted was that, of the fatalities attributed to chloroform, twice as many were in those receiving atropine as premedication. In lighter vein, a series of amusing slides drawn by a colleague illustrated some of the reasons given for preferring chloroform: "less explosion risk," "more relaxation," "teaching purposes," and "surgeon's expressed wish." Summing up, it was recommended that as there was still a place for chloroform, particularly in general practice, its proper use should be taught to students, but as there was little opportunity for this in the modern anaesthetic technique used in surgical practice the proper place for such instruction was in the obstetric departments.

At a laureation ceremony to mark the centenary, Principal Sir John Fraser, Vice-Chancellor of the University of Edinburgh, said that the University was proud to honour the memory of Sir James Y. Simpson and his work for the benefit of medicine and humanity. The honorary degree of Doctor of Laws was conferred upon Dr. Henry Walter Featherstone, of Birmingham, founder-president of the Association of Anaesthetists of Great Britain, and upon Sheriff Thomas Blantyre Simpson, K.C., grand-nephew of the discoverer of chloroform anaesthesia.

In the afternoon a reception was held in the Upper Library of the University Old College, when Dr. Douglas Guthrie gave a brief and interesting address on the life and work of Sir James Simpson, and some personal relics were shown, together with items of historical and technical interest in connexion with the development of anaesthetics.

The social functions included a luncheon in the Senate Hall, and at night a dinner brought to an end the celebration of this centenary.

LIVING CRYSTALS

The first of a series of open lectures arranged by the Edinburgh Postgraduate Board for Medicine was delivered at the Edinburgh Royal Infirmary on Oct. 14 by Dr. R. McWhirter, who in his paper on "Living Crystals" briefly described the nature of the structures acting as the carriers or vehicles of life.

In radiotherapy, he said, malignant cells were destroyed by the changes produced in those structures responsible for the maintenance of cell life, and a knowledge of the nature of those structures was essential to understanding the action of radiations. The simplest organism to study was the fertilized ovum, where the plan of each individual part of the adult organism was written in the genes. In the fertilized ovum of man there were 48 chromosomes, each containing approximately 1,000 genes, both chromosomes and genes being paired, each pair having a maternal and a paternal derivation. The combined action of a pair of genes determined a feature of the offspring. If a particular gene was damaged, that would result in a particular abnormality of the new individual. The permanence of gene structure must be inferred to account for the maintenance of the identity of race and species and for the expression of inherited characters in the adult organism, which was the product of 50 or 60 divisions of the original fertilized ovum. A gene was about 4 to 8 mμ in size, with a volume equivalent to about 1,000 atoms, and only by chemical combination of the atoms to form a molecule could permanency of structure be obtained. A gene was therefore a single protein molecule of about 1,000 atoms with the peculiar ability to reproduce itself exactly (each different gene forming a different molecule of constant structure).

The arrangement of atoms within molecules was constant, as was the position of each atom in a crystal. A molecule was the smallest possible crystal of a substance. A crystal increased in size by one molecule adhering to another, and the growth of crystals was not unlike a living process. The study of viruses had shown that they were similar in size to genes. A virus was a vehicle or carrier of life and could

reproduce itself exactly; it might therefore be described as a "naked gene." From pure cultures of viruses in solution crystals might be obtained, and several viruses had now been obtained in pure crystallized form (hence "living crystals"). It was conceivable that if genes could be obtained in pure form they too would be crystalline.

Genes had an effect on morphology and function, for they were not only able to reproduce themselves exactly but they could also act as models for the formation of allied molecules —i.e., enzymes or ferments, which were similar to hormones (produced outside the cell) and to vitamins (produced outside the body). These substances acted as catalysts and promoted the chemical changes which occurred within a cell. If gene structure was different, then the enzyme patterned on it would be different and new chemical substances would be produced —for example, in the colouring of hair. In phenylketonuria the genes which should produce the enzymes that oxidized para-hydroxyphenylpyruvic acid were absent, and the acid was not oxidized to a harmless substance but accumulated in the blood and cerebrospinal fluid, interfering with function and producing mental deficiency.

Mutation

Changes in gene structure were rare. In any given gene one mutation in a million individuals was the approximate average mutation rate. *X* rays under favourable circumstances could increase this 150-fold. Unfortunately mutations were nearly always harmful and rarely beneficial to the organism, and, being commonly recessive, might not be detected until after several generations. So-called spontaneous mutations might be due to natural radioactivity or cosmic rays or to the disorderly action of heat in the tissues.

As radioactivity might produce mutations in gene structure, it was possible that the widespread use of radioactive isotopes without adequate care might cause considerable damage and pollution of the genes of a large section of the population. The effects produced would vary according to the damage done, and might produce sterility, abortions, stillbirths, and deaths in infancy. Diseases of genetic origin might also be increased, such as haemophilia, amaurotic familial idiocy, deaf-mutism, congenital cataract, and retinitis pigmentosa. Radioactive strontium could produce bone sarcomata, which had also been produced by radium and thorium. The difficulty was not overcome by using substances with a short period of radioactivity, for mutation was a single event and might be produced by radioactivity of short duration. Those were points of great importance to consider in the use of radioactive substances as tracers or in the treatment of diseases not commonly fatal, such as hyperthyroidism.

Radiology had made considerable contributions to the study of non-living material, where it had been possible to show the structure of atoms and of their nuclei. Further contributions to the elucidation of the problem of life might be as great. Atomic research had produced the deadliest of all weapons, the atomic bomb and its side-products, the radioactive isotopes. The damage done by the indiscriminate use of the latter might be less dramatic than that at Hiroshima, but it might be as disastrous.

Nova et Vetera

THE MEDICAL HISTORY OF EXETER

In the preface to his most interesting little book, *The Population and Epidemics of Exeter in Pre-Census Times* (James Townsend and Sons, Little Queen Street, Exeter), Mr. Ransom Pickard tells us that a mathematical Nobel Prizeman said the problem was very easy: "One had to find the number of births and deaths, the numbers going in and coming out, and the rest was a matter of addition and subtraction." In the ideal universe of the pure mathematician it *would* be easy, but that is not the world of the vital statistician. The master criminal in Mr. A. E. W. Mason's tale, *They wouldn't be Chessmen*, was foiled by the neglect of his subordinates to behave like chessmen: had our ancestors obeyed the orders of their rulers, if parish registers of christenings and burials had been complete and enumerations of immigrants and emigrants been made, then to reconstruct the population of any city at any time after the masterful Tudors had ordered records to be kept would only be a matter of addition and subtraction. Actually the records were incomplete. One large source of error was due to schism: many dissenters were not buried, or of course christened, by clergy of the established Church; finally, no serious statistics of internal migration are available.

Statisticians from Rickman to Mr. Pickard have availed themselves of the fact that census-taking began nearly forty years before civil registration, so that over that period the records of christenings, marriages, and burials kept by the Anglican clergy are printed in the census reports. Various ways of using the data were tried (the best account of these is that by the late Dr. John Brownlee, published in the June and July issues of *Public Health* for 1916). If, for instance, one knows by enumeration the population of a town at the census of 1801 and again at the census of 1831, then, *if there were no migration*, the population in 1801 ought to be equal to that of 1831 *plus* the deaths in the thirty years *less* the births. But the baptisms understate the births and the burials understate the deaths, so each must be multiplied by an appropriate factor. Brownlee concluded that when not a particular town but the whole country was in question the factor for burials was 1.2 and for baptisms 1.243. A still simpler method, favoured by Mr. Pickard, is to take the ratio of enumerated population to baptisms (corrected for omissions) for the census years 1801–41, and to use this as a multiplier for pre-census years. Two assumptions are involved —that neither the fertility rate nor the age and sex constitution of the population changed materially over the period under study. Migration, of course, is a complication. Working on these lines, Mr. Pickard concludes that the population of Exeter in 1670 was between 18,500 and 14,400; his estimate, based on the mean values of the ratios of known census populations to births, is 16,100. If one applies the method of addition and subtraction to his means (his Table V) one reaches a somewhat larger figure. The lowest estimate by this method is a good deal larger than Macaulay's estimate of 10,000 (Macaulay did not mention his source) or that based on hearth tax records by a modern writer, Dr. Hoskins, who estimated the number of households in 1671–2 as 2,368 and the population as 11,234—i.e., used a multiplier of 4.74. Mr. Pickard rejects this multiplier as "obviously" too low; I am not sure about the "obviously": the multiplier is rather larger than Gregory King (1648–1712) used for provincial towns, and Mr. Pickard's argument that some *rooms* had no *hearths* is not, I think, conclusive. The tax was levied on what we should call separate occupations or households: I suppose there *might* be occupants of rooms without hearths who would escape notice, but hardly enough to bring the average size of a household from 4.74 to 6.8. But certainly 6.8 is not an impossible figure. John Graunt thought an average household in the City of London (within the liberties—i.e., the most densely populated area) had 8 members—husband and wife with three children and three servants or lodgers. However this may be, Mr. Pickard uses some of the hearth data very skilfully. In four of the Exeter parishes—St. Davids, St. Sidwells, St. Mary Major, and Holy Trinity—in 1671–2 the mean number of hearths per family was 2.11, in 16 other parishes 2.67. The first four parishes were, however, more populous and their inhabitants poorer than elsewhere, as appears from other evidence. In his historical study of epidemics Mr. Pickard shows that the mortality rates of the four parishes, on *any* reasonable assumption, must have been much higher than in the rest of the city, and he provides another example of social–economic contrasts. The decade 1741–50 was a grim one, particularly the year 1741, which followed two bad harvests.

Most of us know that smallpox was a deadly disease in the first half of the eighteenth century; it seems to have been particularly severe in Exeter. A citizen, John Score, who was sheriff in 1736, kept a diary and recorded in it illnesses in his family. Between 1711 and 1732, eight of his children had smallpox and one died of it. In 1729, when three of his children had smallpox, he notes: "The Small Pox was very fatall to some. Mr. Vivian lost all his children, being four sons." It is the combination of careful arithmetic with personal records which makes Mr. Pickard's monograph particularly attractive.

MAJOR GREENWOOD.

Preparations and Appliances

AN ENDOTRACHEAL FLANGE

Dr. JOHN GORDON, Esher, Surrey, writes: It is a common procedure in anaesthetic practice to have an indwelling endotracheal tube in position under the face-piece. The usual precaution taken to prevent the tube slipping into the lung is to fit a Rowbotham's angle-piece, but this has definite disadvantages. The end of the angle-piece may impinge against the side of the mask and become obstructed, or the exhaled gases may be directed over an eye, should these accidentally be included inside the mask. The practice of using a safety-pin damages the rubber tube, and the Woodfield-Davies tubes with the built-in rubber flange are not always to hand.

A set of four flanges has been constructed for me, one of which is here shown. In construction the flange consists of a circular metal plate, 1½ in. in diameter, perforated in the centre and fitted to a tapered corrugated tube. The plate has two small holes at opposite sides. The advantage of these flanges is that they will fit any rubber endotracheal tube and are suitable for both oral and nasal intubation. They will not impinge against the face-piece and therefore do not become obstructed. The absence of any angle eliminates turbulent flow, and thus there is no additional resistance to respiration. The two holes serve as a guide to the position of the tip of the endotracheal tube in nasal intubation if the flange is fitted with the holes in line with the curve of the tube, and in oral intubation are used for the passage of tape, which is tied behind the head to anchor the tube.

These flanges have been made for me by Medical and Industrial Equipment, Ltd., of 12, New Cavendish Street, London, W. 1.

Reports of Societies

EPIDEMIOLOGY OF CHOLERA

At a meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine on Nov. 3 the problems of cholera control were discussed. Dr. W. S. C. COPEMAN, the president, said that on Sept. 22 it became known that five people in an Egyptian village had been admitted to hospital for what was taken to be food-poisoning. Within not much more than a month there had been several thousands of deaths from cholera in Egypt. This might prove to be one of the historic epidemics of the world. Two of the speakers in the discussion, Major-General Sir John Taylor, late of the Kassauli Institute, who had had vast experience of cholera in India, and Mr. P. Bruce-White, who had conducted bacteriological research in the subject, would within twelve hours be on their way to Egypt to endeavour to assist the authorities.

Problems of Cholera Control

Sir JOHN TAYLOR said that in India alone 200,000 deaths in a year from cholera had been recorded. So long as conditions continued as they were in the East there was always risk of spread to the West. In view of the control which it was now possible to impose, however, the danger of spread to this country was greatly minimized. The basic problem of cholera concerned the endemic centres; but for their existence cholera would die out. No full explanation of the special localization of cholera had as yet been given. A region might be said to be endemic when month by month and year by year over long periods deaths from cholera were reported. Such continuity was shown in Lower Bengal, where, in the 32 years for which figures were available, less than 30 months had been free from reported deaths. There was here a continuously low level of incidence with, occasionally, a rise to epidemic level. In some areas where extremes of climate were considerable there were favourable seasons during which the disease appeared to die out, but here during such seasons cases were liable to be imported and the infection was carried over to the subsequent high incidence period. Some areas showed cyclical recurrences. Infection was maintained by a chain of human cases, convalescents or close contacts. The existence of an endemic centre was a source of danger to neighbouring areas. The obvious policy to adopt was to concentrate measures of control in the area in which infection was maintained. The matter was one which might well come within the purview of the World Health Organization with a view to co-ordinating measures where help was required. There was no short cut in dealing with this situation. There must be continuous improvement in general sanitation and water supply, and the difficulties of securing this could only be appreciated by those who had actually seen the conditions in the endemic areas.

Three main routes of extension from India had been recognized: (1) the long land route through Afghanistan and Iran; (2) the route by the Persian Gulf to Irak and on to Syria, Turkey, and the Mediterranean; (3) the Red Sea route to Egypt. Infection had not been carried to Europe by the first of these routes for many years, and the route did not at present constitute a major danger. The short sea journey from India was most serious in introducing these infections into Irak. That the disease should have been so introduced on eight occasions since the present century was sufficient to illustrate the danger. The danger of the Red Sea route arose from the multitude of pilgrims. A severe epidemic due to conveyance by this route occurred in 1902, with 34,000 deaths. He thought, however, that confidence might be felt in the quarantine measures now imposed on that route. An important point was the detention of pilgrims at the port of embarkation in India for five days before going on board ship, and the call at a port in the Red Sea. This had removed one of the greatest dangers of spread to Egypt and Europe.

On the question of the cholera carrier numerous observations had been recorded concerning the isolation of the vibrio from the stools of convalescents and contacts. Some of the earlier workers had reported intermittent isolation for several weeks or even months; but the question of the reliability of the serological diagnosis arose. The carrier problem in cholera had not the gravity which it possessed in, say, typhoid, and in practice infection from possible contacts or convalescents would appear to be small. Air travel, of course, introduced new complications. It was possible to travel by air from a centre where cholera was epidemic or endemic to almost any part of the world within the five days' incubation period, though as yet there was no confirmed evidence of cholera having been carried in this way. Air travel, as every passenger by an aeroplane knew, was by no means casual; it was surrounded by many formalities, and, moreover, it was possible to trace the movements of passengers. He concluded with a word of appreciation concerning the inoculation measures. Certain Indian statistics which he had seen but which were as yet unpublished confirmed the efficacy of inoculation.

Bacteriological Investigations

Mr. P. BRUCE-WHITE said that the problem of arriving at tests for invariably detecting cholera infection was twofold—namely, to devise means of identification of the cholera vibrio and other vibrios, and to find the organism responsible for cholera. The first was a laboratory problem; the second was only to be approached in close association with field studies. It could happen that the techniques with diagnostic sera in different laboratories applied to a single series of strains gave results widely at variance. It was these variations which led in the 'thirties to an international reinvestigation of the vibrio, its serology and relation to cholera. He summarized the work with which Gardner and he were associated in 1934–5. The vibrio, said Mr. Bruce-White, was a "sport." It kept to itself, through many tests, the secret of its pathogenicity. Even with the classical vibrio, the evidence of its prime role in cholera was circumstantial. After much work on the subject he came to the conclusion that in the field it might have some property lacking in the laboratory; but when visiting cholera wards in

Calcutta during the spring epidemic, when every bed was occupied, and when it was even said that the vibrio could be isolated from the saline transfusions, he inquired into ward infection among sweepers, ward attendants, and nurses, and was assured that there was none. Therefore his belief in a virulence factor which was lost in culture but present in the field was somewhat shaken. He could only conclude that the cholera vibrio as the primary cause of cholera did not hold good in quite 100% of cases.

Dr. ROSEMARY JACKSON gave the results of a small survey she had carried out on the distribution of vibrios in natural waters in this country. During the period October, 1945, to July, 1946, she examined over 40 samples from various sources, such as ponds, streams, natural lakes, and Thames waters, and succeeded in isolating vibrios from 75% of them. She thought that there was little doubt that if examinations were made at frequent intervals all such waters would be found to contain vibrios. From 30% of the positive samples more than one type of vibrio was isolated. Biochemical and serological tests were carried out on some 50 vibrios, and comparisons were made with the Indian and Far Eastern strains. The main biochemical points of interest which came out were that only three indigenous strains gave a positive cholera-red reaction; that 64% were of the Heiberg type; and that 50% were haemolytic, and the haemolysin was found to be both filtrable and antigenic. Serologically the vibrios were found to be heterogeneous in type and not related to Indian and Far Eastern non-cholera strains. One strain possessed the H antigen for *V. cholerae* and was also cholera-red positive, demonstrating once again the dangers inherent in using diagnostic cholera serum prepared against the whole organism.

Cholera Outbreaks in Great Britain

Dr. E. ASHWORTH UNDERWOOD gave a brief history of cholera outbreaks in this country. Asiatic cholera did not visit this island until 1831. Cholera reached Europe in 1829, and during the two following years it was widespread in the central part of the continent. In Britain much anxiety was felt. Indigenous cholera in this country, known as *cholera nostras*, resembled in certain features Asiatic cholera, and the question arose how medical men were to decide true cholera if and when it arrived. The Central Board of Health arranged for consultations with medical men who had had experience of the East. When Asiatic cholera did arrive, however, no one was left in any doubt. The first death occurred in Sunderland in October, 1831, and by the following Jan. 9 there had been 215 deaths from cholera in that town. Cholera next appeared in Newcastle in December, 1831, and spread to Gateshead and other Tyneside towns by Christmas. Middlesbrough suffered a devastating attack, and several other towns were stricken. The outbreak seemed to have exhausted itself in the early summer of 1832, but later it revived. In Glasgow there were over 3,000 deaths. The epidemic started in London in February, 1832, and dragged on until the end of the year. Three noteworthy outbreaks, either because of the havoc they wrought or because they happened to have been well described, were at Exeter, where there were 1,100 cholera cases in a population of 28,000; Bilston, Staffordshire, where within a week of the outbreak, which lasted seven weeks, there were 150 cases; and at Dumfries in October, where there were 630 deaths in six weeks. The total number of deaths in the epidemic of 1831–2 was 21,000 in England and Wales and 9,000 in Scotland. There was a recrudescence in 1833 in London, but it died down, and cholera was seen no more in this country until 1848–9, when again many towns were heavily attacked. There were further epidemics in 1853–4, 1866, 1873 (only a few cases), and 1893, which was the last occasion when cholera obtained a foothold in Great Britain. Dr. Underwood mentioned that one result of the epidemic in 1848–9 was the foundation of the Prudential Assurance Company, as the result of some efforts by a Lambeth clergyman to insure his parishioners against the disease.

National and International Measures

Dr. MELVILLE MACKENZIE said that in this country the risk of an epidemic of cholera was generally very small, but there was always the possibility of an individual being flown from Egypt and going to some village in England where perhaps the local practitioner had never even seen cholera and where the water supply was not satisfactory. No restrictions had as yet been put upon air traffic from Egypt. Inoculation had not been required, and reliance was placed entirely on the cards given out on arrival at the airport; but in view of one or two occurrences it was proposed to institute immediately a surveillance of all individuals who during the five previous days had spent one or more nights in Egypt. Another difficulty concerned various importations from Egypt, such as cotton and fruit, but the length of travel time by land and sea made most of the commodities safe.

In international work the World Health Organization had offered to buy cholera vaccine from different countries. An emergency meeting of the expert committee on quarantine had been held, at which an excellent statement was made on the position in Egypt and appreciation was expressed of the thoroughness with which the Egyptians were combating the epidemic. The Quarantine Committee had made a number of recommendations covering such questions as testing of vaccines and disinfection of aeroplanes. That week-end alone £5,000-worth of medical supplies and stores were being flown to Egypt; this included 3,000 syringes, in addition to a million doses of cholera vaccine. The difficulty was the lack of standardization of vaccine, a matter which the Quarantine Committee had referred to the Biological Standards Committee for consideration at its next meeting. Further epidemiological investigation was needed into the viability of cholera vibrios in sewage and also in fresh fruit and other commodities.

Sir LEONARD ROGERS, with the aid of maps, traced the course of various waves of cholera across India to other countries and also discussed the seasonal incidence. In the Punjab an epidemic resulting in 1,000 deaths might take place in October and die down in November, disappearing completely in subsequent months, but appearing again later. He described the Punjab areas as the real danger. General Sir JAMES HANCE said that he supposed the same principles governed anti-cholera work in Egypt as elsewhere, namely, disinfection of water supplies, attention to environmental hygiene, and inoculation. For his own part he had never had any doubt of the value of inoculation against cholera.

BRITISH FOOD RESOURCES AND REQUIREMENTS

A conference arranged by the Nutrition Society on "British Needs and Resources of Calories, Proteins, and Calcium" was held at the London School of Hygiene and Tropical Medicine on Oct. 25, with Mr. WALTER ELLIOT, M.P., as chairman.

Food Consumption

Mrs. M. C. BOWLEY, Dr. R. E. BRANSBY, Dr. H. E. MAGEE, and Miss B. R. STANTON said that in calculating the national requirements for various foods their first step was to frame diets for representative individuals of the various groups, arranged according to age, sex, and condition. These diets were planned to conform with British habits of eating when unhindered by rationing. At the same time they contributed sufficient calories, protein, calcium, and other nutrients to satisfy the recommendations of the Technical Commission of the League of Nations. The diets were based on conventional meal patterns and covered all food in natural or processed form eaten in the home or outside. Meat, fish, bacon, eggs, and cheese were included in amounts sufficient to provide a savoury dish in each of the three main daily meals throughout the week; milk and fruit were also to be provided in liberal amounts. The next step was to consult statistics on the proportions of the various groups in our total population and so to calculate the national requirements. The conclusion was reached that the fulfilment of the nation's demands would require a 48% increase in milk and its products above our pre-war consumption, 56% in potatoes, and 27% in vegetables. Against these increases could be set a 14% decline in sugar, 5% in meat, and 6% in grain. By 1964 our needs for

foods would presumably have increased considerably, with the demand for meat 50% and for potatoes 60% above the pre-war levels. The main difference between the present recommendations and those recently put forward by Leitch lay in the provision of larger amounts of meat, fish, eggs, potatoes, and fruit.

Mr. F. LE GROS CLARK commended the proposed diet for its variety and palatability, but questioned whether such a high allowance of animal protein was physiologically necessary. The food pattern chosen, moreover, differed from that adopted by the bulk of our population, particularly in regard to the evening meals. If rationing were stopped an increased consumption of sugar might be expected, while the sale of meat and other expensive foods would probably be related to prevailing economic conditions.

Prof. J. BEATTIE pointed out the difficulty of estimating the calorie requirements of adult subjects. In carefully controlled experiments in a German prison he had observed the effects of subsistence for four months on a diet which provided only 1,750 calories daily. The subjects, who did not work, all lost weight at first. Later, however, their weight became constant, with the return of a positive nitrogen balance and a considerable fall in the basal metabolic rate. Some of the prisoners were then given another 500 calories daily in order to find out whether this extra allowance would enable them to perform forestry work. The main effect of the supplement was to raise the B.M.R., and the men remained incapable of doing manual work.

Dr. E. C. OWEN remarked that the estimate of 1 g. daily for the calcium requirement, quoted by Dr. Magee and his colleagues, was substantially greater than estimates of 0.29 to 0.67 g. made by other workers. Age influenced the calcium requirement; the highest incidence of skeletal fractures occurred at ages 10–15 years. Another important factor was the vitamin D intake; in a well-known boarding school the incidence of fractures was greatly increased during the years 1918–22, when unvitaminized margarine was substituted for butter. In regard to animal proteins he suggested that their great biological value might be due mainly to a high content of lysine.

Dr. I. LEITCH observed that in comparing her estimate of the nation's food requirements with his own Dr. Magee had not made adequate allowance for the unaccountable discrepancy between estimates of food supplied and food consumed. With most foods the gap was about 10%, but there was too much variation for the same correction to be applied indiscriminately to all foods. Prof. J. R. MARRACK considered that agreement within 10% of estimates of food supplied and consumed was as good as could be expected in view of the low degree of accuracy of dietary surveys.

Dr. E. C. WOOD said there seemed to be some danger of confusing the amounts of food necessary to conform to a conventional dietary pattern with those actually necessary to satisfy physiological demands. The national food requirements could be calculated in three distinct ways as: (1) the minimum amounts of each type of food necessary on a strictly physiological basis to maintain health; (2) the amounts of food which would be necessary to conform to some standardized food pattern: (3) the amounts which would be consumed if the whole population could choose and eat all foods freely, without being deterred by the need for payment.

Food Production

Dr. E. T. JONES, in a paper read by Dr. G. Bourne, discussed the production of cereals and root crops. While our home production of potatoes sufficed for human requirements, we grew sugar beet and wheat only sufficient for about one-third of our requirements. By more intensive cultivation the yield per acre of all these crops might be increased, and by diverting ground now used for potatoes to wheat or beet a greater contribution to our total calorie requirement might be obtained.

Prof. H. D. KAY dealt with milk production. The present output in this country corresponded to 0.62 pint (352 ml.) per head per day, whereas 0.77 pint (437 ml.) would be necessary to meet Dr. Magee's estimate of our requirements. In order to increase milk production the main essential was to provide more food, such as grain, bean meal, or oil cake, for our present herds. More use should be made of artificial insemination by selected bulls to produce cows capable of a high milk yield. Such animals, however, required more food and more attention than ordinary cows.

Dr. J. HAMMOND told how the production of meat in Britain had declined in recent years. In 1932 we produced 30 lb. (13.6 kg.) of carcass weight of bovines per head of the population with 15 lb. (6.8 kg.) of sheep and 20 lb. (9 kg.) of pig —a total of 65 lb. (29.4 kg.). For 1946 the corresponding figures were 24 lb. (10.9 kg.), 8 lb. (3.6 kg.), and 6 lb. (2.7 kg.) —total 38 lb. (17.2 kg.). In order to produce more meat as a contribution to Dr. Magee's total demand of 146 lb. (65.7 kg.) per year it would be necessary to import more animal foodstuffs. One economical way of producing beef was to fatten the animals on the summer flush of grass, and then keep the meat in cold storage until required. Our sheep population was reduced from 26 millions to 18 millions as the result of the wartime agricultural policy, and a further 4 millions were lost in the blizzard early this year. In breeding sheep the Border Leicester, and other types which had a high incidence of twin lambs, should be encouraged. A few pigs should be kept on every farm to use up odd scraps of food.

Drs. R. J. H. BEVERTON and G. C. TROUT, discussing fish, said that before the war a typical annual catch was about 500,000 tons, including 137,000 tons of cod, 74,000 tons of haddock, 40,000 tons of hake, 33,000 tons of plaice, 10,000 tons of crabs, lobsters, and mussels, and the remainder mainly as herrings. In some instances these hauls were more than the fishing-grounds could sustain, and in the North Sea area in particular fish became scarce and small. Vast numbers of cod, however, were always available in the Arctic waters around Bear Island, and conditions nearer home had improved as the result of the interference with fishing during the war. The herring, which was of special value as a source of calories on account of its high fat content, had shown no signs of being over-fished, even in the North Sea. The main difficulty in taking full advantage of herring catches lay in the perishable nature of this fish, which should be consumed or preserved within 36 hours of catching. By greater exploitation of the herring and Arctic cod and with enlarged fishing fleets it should be possible to increase the total catch by 40% of the pre-war level, with a resulting contribution of over 6 g. of protein per head per day to the national diet.

Mr. E. T. HALNAN calculated that to satisfy Dr. Magee's estimate of our food requirements it would be necessary to provide 208 eggs per head of the population each year. The consumption for 1946, including dried eggs, was 180 per head, which meant that we were actually eating more eggs than before the war. Only about 80 of these eggs, however, were home-produced. There would be no difficulty in building up stocks of hens in this country if sufficient food could be obtained. Possibly some home-grown wheat and barley might be spared for poultry feeding. Plenty of wheat offals would, of course, be available for chickens if the extraction rate of flour were to be reduced to its pre-war level of 70%.

Discussion

Dr. W. K. SLATER expressed doubts as to the feasibility of increasing agricultural production to the extent advocated. Any further land put under cultivation must necessarily be of poor quality. Unduly intensive cultivation would lead to competition for materials and labour. Thus an increase in the sugar beet crop would demand additional labour besides capital expenditure in the erection of more factories. It would, moreover, be difficult to educate 300,000 farmers in the methods necessary for intensified cultivation.

Dr. NORMAN WRIGHT, who was recently appointed as Scientific Adviser to the Ministry of Food, spoke on the relations between overseas supplies and the home production of food, and emphasized the need to prevent waste. Dr. W. R. WOOLDRIDGE pleaded for more efficient action in preventing diseases in farm animals, and condemned the action of the Ministry of Food in importing the infected carcasses which gave rise to the present outbreak of fowl pest.

Prof. A. W. ASHBY, in a general survey of the day's proceedings, regretted that the activities of the Scientific Food Policy

Committee had been discontinued. He saw an urgent need for consultation between those who had given papers in deciding on the dietary standards which were necessary for adequate nutrition of the human subject. It was equally essential to discriminate between the rival claims of the various farm animals to share in such foodstuffs as were available.

LUNG ABSCESS

At a meeting of the Manchester Medical Society on Oct. 1 Mr. W. F. NICHOLSON, reading a paper on this subject, said that bronchial obstruction with secondary infection was the common cause of lung abscess. In normal health the cilia lining the bronchial tree kept the air passages free from organisms and debris. When ciliary action was impaired by trauma, infection, or growth, coughing was effective in preventing bronchial obstruction. When coughing was embarrassed by pain or anaesthesia or tenacious secretion, bronchial obstruction might occur.

An abscess due to bronchial embolism was peripheral in the lung, though it might not present on the costal surface. Because the subapical segment of the upper lobe and the apical segment of the lower lobe contained the most dependent bronchi in the lateral and supine positions respectively, these segments were most frequently affected, and consequently most inhalation abscesses presented on the costal surface of the lung corresponding to these segments. The upper-lobe abscess was common after operations on the upper respiratory tract, in which a lateral position was usually employed in the immediate post-operative period. Lower-lobe abscess was often due to abdominal operations, which were associated with a supine or Fowler's position. A putrid lung abscess was frequently undiagnosed because it was still not widely known that such an abscess could exist without foul sputum. When the abscess ruptured into the bronchial tree sputum would be present; but even before this happened there might be fetid breath.

Treatment was by drainage, either bronchial (postural) or external (by operation). In either case location of the lesion must be exact if treatment was to be rational. The responsibility of the physician in these cases was heavy. If he delayed external drainage, in many cases the disease spread to a diffuse suppurative pneumonia of a lobe, which would eventually require a lobectomy. Moreover, the immediate mortality of conservative treatment was considerable. Only by sharing the responsibility with a surgeon from the beginning could drainage be instituted promptly in cases which did not respond to medical measures. Chemotherapy and antibiotics were of value, but did not replace drainage. Bronchoscopy was of value in locating the broncho-pulmonary segment of the abscess, in improving bronchial drainage, and in excluding a foreign body or growth; as a curative measure it was of little more value than postural drainage. Surgical drainage would decrease mortality and morbidity.

At a meeting of the Liverpool Medical Institution on Oct. 23, with the president, Dr. H. Wallace-Jones, in the chair, Dr. R. Lipman read a case history illustrating psychogenic factors in dysmenorrhoea, menorrhagia, and *Mittelschmerz*. Mr. Barry McMurray reviewed the various lesions which may occur in sprained ankles.

The autumn number of *Biology and Human Affairs* (obtainable from the British Social Hygiene Council, Tavistock House North, Tavistock Square, London, W.C.1, 2s. 6d.) contains an interesting article by Prof. J. M. Mackintosh on "The Contribution of Science to Comfort in the Home." He comments on the delay between the discovery of knowledge and its application in the home—a popular topic of conversation among housewives after reading articles on the contributions that science could make to their comfort. He attributes it partly to the conservatism of builders, and to those people, often elderly, who choose designs for new houses for working people—"the cold, dead hand of a passing age presses too hard on an age that is coming to birth."

Correspondence

Anaesthesia for Head and Neck Surgery

SIR,—The article by Dr. J. G. Bourne (Oct. 25, p. 654) on the subject of thiopentone–nitrous-oxide–oxygen anaesthesia with curare for head and neck surgery will have been read with interest by all. May I trespass on your columns to say that my reaction was one of admiration for the obvious skill of the author? Following hard on this, however, I found myself asking, does this method in fact promote the well-being of the patient and constitute an advance in the degree of safety afforded to him, or does it rather represent an advance in the technical skill of the author? (For these two virtues, though usually so, are not invariably synonymous.) My doubts were increased when I saw that, in the five instances in which the advantages of the new method or the objections to the old were enumerated, on every occasion the time factor was given pride of place. The factors such as the degree of safety and the comfort or discomfort of the patient followed in (presumably) their due order. One cannot but gain the impression that the speed of the method constitutes its chief attraction in the author's estimate.

I also find it rather hard to agree with the statement that for procuring the initial relaxation for intubation there is no agent as safe as curare. I have yet to see the figures that will convince me that the dangers of a few ounces of ether are greater than those of 20 mg. of curare. The amount of ether required for a blind intubation (and in the majority of head and neck cases a nasal tube is as good as an oral) is not very large. If the head is not moved, anaesthesia can be maintained with a minimum trickle; and if it is possible to turn off the ether 10–15 minutes before the end, then the degree of post-operative nausea is but reasonably transient in most cases. That the degree of relaxation afforded by this method should be cited as one of its virtues caused me a mild degree of surprise, for I have worked with Continental as well as English surgeons (through circumstance rather than choice), and have never been asked, during a head-and-neck operation, for a degree of relaxation that would necessitate the giving of 20 mg. of curare.

Surely one of the advantages of curare is that it provides where needed a degree of relaxation that could otherwise only be brought about by some form of nerve block or the use of toxic amounts of the inhalational agents. Is, then, the method described by the author a logical outcome of this; or is it a very skilled demonstration of cracking a medium-sized walnut with an out-size sledge-hammer?—I am, etc.,

London, W.8. G. C. STEEL.

SIR,—I read with interest Dr. J. G. Bourne's article (Oct. 25, p. 654), and my purpose in commenting is to inquire rather than to criticize. Under "Method" the sequence enumerated appears to me to be capable of improvement both in the safety factor and in time. Would it not be better to adopt the technique for curare advised by Dr. Gray, of Liverpool, and to give the injections in the following order? (1) Test injection of "tubarine," 5 mg. (one-third average induction dose); (2) wait for four minutes to observe its effect, from which to judge the total injection dosage advisable, and then inject this—say, a further 10 mg.; (3) immediately give in a separate vein an intravenous barbiturate in adequate dosage.

By this time the patient will be ready for laryngoscopy, "cocainization," and intubation. Then N_2O—O_2 may be continued, with a further relay of barbiturate if necessary at a later stage. By this there is not only a safer control of curare but also a saving of time, as the effect of both the tubarine and barbiturate synchronize.—I am, etc.,

Barton-on-Sea, Hants. HAROLD C. J. BALL.

All the Vitamins

SIR,—When you published Dr. Leslie J. Harris's article (Nov. 1, p. 681) in reply to a simply worded request in "Any Questions?" one expected a simple reply, giving the answer in words which the average doctor could understand. I wonder if the reader who sent that question is satisfied by Dr. Harris

article. Is he interested to know that α and β carotene, kryptoxanthine, lepronene, echinenone, and myxoxanthine, etc., serve as provitamins for vitamin A? Does he find it easy to learn the eye changes of A deficiency when he reads that xerotic changes, Bitot's spots, xerophthalmia, and keratomalacia occur, or would he prefer to have a description of the appearance of the eye in less technical terms such as dry or scaly? Similarly with nicotinamide. Does it convey anything to the average reader to learn that it is a component of codehydrogenase I or "Euler's cozymase" diphosphopyridine nucleotide, and also of codehydrogenase II or Warburg's enzyme triphosphopyridine nucleotide? If the space taken by those words had described what the mental changes of pellagra are (we are told there are mental changes, but whether mania, depression, dementia, or hallucinations is not stated), would that have been more helpful?

No doubt the article is full of accurate and scholarly information to the advanced biochemist and nutritional research worker, but such persons have their special books on the subject and do not need to read it in the *B.M.J.* Surely your job as editor is to see that information and fact rather than incomprehensible words are dispensed to your readers. There is no mention of the fact that the teeth become loose and fall out in scurvy (though we are told the reversibly oxidized derivative dehydroascorbic acid is active in treating it), and nothing is said of the occurrence of the signs of riboflavin deficiency in the common iron-deficiency anaemia of women, though the occurrence of riboflavin as iso-alloxazine-adenine-dinucleotide is mentioned. One could go on indefinitely. Under vitamin D we do not learn whether it helps children to grow better teeth or not, but are enlightened about vitamin D_3 being irradiated 7-dehydrocholesterol (cholestadien-3-ol).

I am not criticizing the article itself, only your policy in printing it. If I am wrong in believing that less than 2% of your readers understand most of the technical terms, I apologize for unfair criticism, but if I am right, I suggest that you owe it to your subscribers to give them useful, understandable, and practical knowledge instead of allotov-words-2-obscure-4-any 1 2 succidin-understanding them.—I am, etc.,

London, N.W.10. RICHARD ASHER.

*** The question asked was as follows: **Q.**—Please give a list of vitamins *with all their different names* and with notes on the signs and symptoms of deficiency [our italics]. It was assumed that medical men know the meaning of medical technical words such as xeropthalmia.—ED., *B.M.J.*

SIR,—Those who have to keep pace with the literature on vitamins will best appreciate Dr. Leslie J. Harris's difficulty in attempting to compress even into three pages of the *Journal*[1] the answer to the question about vitamins which a correspondent expected to appear as a brief reply in "Any Questions?" There are nevertheless one or two points in Dr. Harris's article which should, I feel, be slightly amplified. For example, Dr. Harris includes para-aminobenzoic acid ("paba") in his least significant group—viz., those vitamins needed by animals but whose significance for humans is uncertain. It has, however, been shown in several series of clinical trials[2–4] that paba in pharmacological dosage has a pronounced effect in the treatment of the rickettsial infections in man. The vitamin is listed in Appendix B in an M.R.C. report[5] among substances showing no activity in a 20-mg. dose given to a 15-g. mouse, but no human test on it is recorded in the report.

A further point which often arises occurs in connexion with the value of vitamin E in human abortion. As long ago as 1940 Bacharach demonstrated mathematically[6] that the probability of the results obtained with it in the treatment of a series of 42 patients, who had had four or more abortions, having been obtained by chance was one in 10^{40}, a degree of probability excelled or equalled by very few clinical trials indeed. In connexion with the value of certain members of the B_2 complex for the human, there appears to be a slight inconsistency between the editorial advice[7] to take "supplements . . . of yeast or wheat-germ preparations . . . rather than preparations of isolated vitamins" (on the grounds that it is implied by M. Richards's work[8] that "ingestion of large amounts of one member of the B group . . . may induce signs of deficiency of . . . other members") and Dr. Harris's relegation of pyridoxin to this third (i.e., least significant) group, since Richards's work was concerned particularly with pyridoxin deficiency. Subject to a further point to which I refer below, one cannot but agree with the editorial recommendation, but it *is* a fact that Richards's work was concerned with induced pyridoxin lack. If we accept the transference to man of the implications of Richards's work as in your leading article, we can no longer logically regard pyridoxin as of doubtful physiological significance in nutrition.

My reservation in connexion with your editorial advice relates to the recommendation of "yeast . . . preparations," and is twofold. First, the comparatively large amount of yeast which a patient must consume is not generally appreciated. While there are, of course, some highly potent strains, at least an ounce of a normal yeast must be eaten to provide even a prophylactic dose of vitamin B_1. Having regard to the flavour of yeast, this is rarely practicable—least of all, as a rule, for those whose need is greatest. Secondly, it is *essential* that every precaution should be taken by the maker or the user to destroy all viable cells in the yeast. It has been shown repeatedly[9–14] that yeasts cannot all be relied upon as sources of vitamin B_1 and that yeasts *may* be used in the human as negative sources of the vitamin. Indeed certain yeasts are actually recommended by Kingsley and Parsons[12] as offering a convenient and rapid means of depleting human subjects of B_1 without the need of using unpalatable "deficient" diets. This fact has been widely overlooked, and both in this country and in the U.S.A. the "liveness" of certain yeasts has actually been adduced as a recommendation for their use.

In conclusion I should like to refer to two questions of dosage or standard requirements. It is now becoming clear (and Dr. Harris, in citing the L. of N. standard for vitamin A—3,000 i.u. *as carotene*, equivalent to 1,000 to 1,500 i.u. as preformed "animal" A—gives tacit approval to this viewpoint) that the human requirement is nowhere near the figure of 4,000 i.u. included in such prophylactic preparations as vitamin A and D capsules, *N.W.F.*, still less the 4,500 i.u. included in "pluravit," *N.W.F.*

It does appear, therefore, that in the present state of world shortage of vitamin A more general acceptance of the lower figures—fairly conclusively established since the L. of N. standards were evolved, by the Accessory Food Factors Committee of the M.R.C.[15]—could result both in substantial financial economies in this country without the slightest risk of prejudice to health and, what is much more important, in the freeing of material for those in need who cannot at present be supplied.

My other point is in the reverse direction. Dr. Harris suggests (and few nutritionists would disagree) a daily prophylactic requirement of 1–2 mg. riboflavin. Why, then, does the formula for pluravit, *N.W.F.*, provide only 0.05 mg.?—a quantity which is so inadequate in relation to needs that a food manufacturer claiming riboflavin activity on the label of a foodstuff providing in normal daily usage even as much as *four times* the pluravit-content figure would still contravene the Ministry of Food's directive relating to the administration of the Labelling of Foods Order, and would also render himself liable to prosecution under the relevant Defence Regulation for misleading the purchaser.

These various points relating to requirements of vitamin A, therapeutic usefulness of para-aminobenzoic acid and vitamin E, precautions in the choice of yeast preparations, and the token riboflavin content of pluravit are all worthy of note by those prescribing vitamin preparations.—I am, etc.,

The Research Laboratories, Vitamins Ltd., London, W.6. M. D. WRIGHT.

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Vitamin-C Content of Fruit-squash Concentrates

SIR,—Your question and answer on this subject in "Any Questions?" (Aug. 23, p. 318) has come to our notice. In our view both the question and the answer are couched in terms which may give rise to some misconception regarding the true position. It is an accepted fact that fruit squashes made from citrus fruits retain no appreciable quantities of ascorbic acid,

even though they do contain 25% of fruit juices, and contain (generally) sulphur dioxide, which acts as a preservative of vitamin C.

Fruit squashes are almost entirely produced from juices imported into this country in concentrated or unconcentrated forms, and the retention of ascorbic acid is extremely variable. It is a fact that as yet no claims are being made for vitamin-C contents in any squashes, and the relationship suggested in your answer—i.e., that the fruit-squash concentrate should contain one-quarter of the ascorbic acid in the fresh juice—cannot be upheld.

The use of the term "concentrates" in connexion with these squashes is open to objection. Under the existing S.D.I. regulations fruit squashes are placed in the category of "concentrated beverages," but this term possesses no significance to the general public. On the other hand we have the Ministry of Food welfare orange juice, which is in fact a concentrated juice, and national rose-hip syrup, which is similarly a product which has been concentrated from the raw juice or extract. In this case the concentrated product contains many times more vitamin C than the fresh juice. In a further category we have black-currant syrup and purée, which contain less ascorbic acid than the straight juice or pulp, but in which the vitamin C is remarkably stable.

As a means of comparing these figures the following table may be of use :

Substance	Ascorbic Acid in 1 oz. (28·4 ml.)
Ministry of Food welfare orange juice	57 mg.
National rose-hip syrup	57 mg.
Black-currant syrup	20 mg.
Black-currant purée	20 mg.

It is probably wise to regard only those products whose labels indicate a definite guaranteed ascorbic-acid content as having any appreciable vitamin-C potency.—I am, etc.,

Bristol. VERNON L. S. CHARLEY.

Penicillin for Infected Hands

SIR,—The article by Mr. Frank d'Abreu, Surgeon Lieutenant Charles M. Flood, and Dr. Harold B. Hewitt on penicillin for the treatment of infected hands (Oct. 18, p. 603) should be publicized widely if only to cut the rate of absenteeism in these critical days. The letter by Dr. John P. Raw (Nov. 1, p. 707) on the local application of penicillin should also be noted for an economical and very valuable method. It was one that I introduced to the 84th General Hospital in October, 1944, using the 10,000-unit tablet of *calcium* penicillin because of its slower rate of absorption.

My method was to introduce 1 or 2 tablets into the abscess cavity and occlude the wound wherever it was possible with elastic adhesive bandage, leaving it unattended for 24–48 hours. A second application of the tablets was sometimes necessary. Even after the first dressing it was remarkable to note the diminution in inflammation and induration around the lesion. The method was very valuable in the case of carbuncles and solitary boils. Quite often the central slough in a carbuncle would come away with removal of the first dressing.

I agree with Dr. Raw that the surrounding inflammation and induration seem to form a barrier to blood-borne penicillin and that the local application is much more effective.

Since my return to civilian practice I have continued to use this method and have only found it necessary to use parenteral penicillin in those cases where the abscess, boil, or carbuncle is in its very early stages—that is, before the barrier effect is set up.—I am, etc.,

London, E.4. H. WINCH.

SIR,—I read with much interest the method of local penicillin treatment as described by Dr. John P. Raw (Nov. 1, p. 707). I have used this method extensively for the past three years with outstanding results. I first treated cases of R.N. personnel with the 10,000-unit tablets as issued to the Services. Hand and foot infections were successfully treated with a minimum of incision. The treatment of tendon-sheath infection was very satisfactory. In most cases pus formation had ceased in 72 hours and healing and function were complete in about 16 days.

The most outstanding case, however, was that of a farmer with a deep palmar infection. The hand had the colour and contour of a boxing glove, with severe lymphangitis and oedema extending to the axilla. Four 10,000-unit tablets were inserted deep in the slough situated in the centre of the palm, and a small gauze dressing covered with G.P. tissue was applied. Within 12 hours serum and lymph were pouring from the slough area, and the slough came away the following day. The contours of the hand and arm were restored in 24 hours. In 72 hours active movements of the fingers were encouraged. With difficulty I restrained him from resuming full duty on the seventh day.

To facilitate the introduction of the tablet I thrust a grooved director deep into the septic area, place the tablet on edge in the groove, and push it on with a probe. The point of the director is depressed and the tablet runs over the end and remains. The director and probe are then withdrawn. The method is very useful in the treatment of breast abscess, and the size of the incision can be greatly reduced. In some cases of breast abscess I have combined local treatment as described with twice-daily doses of 300,000 units. I am not yet satisfied that the results are an improvement on the local method alone.—I am, etc.,

Alexandria, Dumbartonshire. WILLIAM SCOTT.

Road Accidents

SIR,—Dr. E. Granger (Nov. 1, p. 709) appears perhaps to confuse the activities of the tongue and of the mind. High output of the one is not always accepted as evidence of good functioning of the other, and the mind of the silent driver may be better occupied than by trivial conversation. Does Dr. Granger feel less safe when in public-service vehicles than when driven by his garrulous acquaintances, and would he advocate, for safety reasons, that the drivers of buses and coaches should sit with the passengers, in order to enjoy the benefit of distracting conversation ?

The apparent attempt to discredit the saying, "Don't speak to the man at the wheel," which of course goes back long before motor-car days, is a poor contribution to make to road safety. If, as your leading article suggested, medical men in general are seriously perturbed about road accidents, they may be interested to know that they can make some positive contribution by joining, for a very modest subscription, an association which neither supports nor is supported by any sectional interest, but which exists solely for the quite praiseworthy motive of the promotion of safety and the preservation of life on the roads.—I am, etc.,

London, N.W.8. R. J. CLAUSEN.

B.C.G. Vaccination under the Red Cross

SIR,—With more than half a year's experience of B.C.G. vaccination in several European countries the Danish Red Cross is now in a position to give a fairly detailed account of its work in this field. Starting with Poland it has extended its work to Yugoslavia, Hungary, Austria, and the American and British zones in Germany. The sum allotted to this work is 3.5 million Danish crowns, and it is actively supported by the Danish Government and the State Serum Institute, whose chief, Dr. Örskov, has published a commendatory article on B.C.G. vaccination in the September number of the *Journal of the Danish Red Cross*.

The work has hitherto been carried out by 15 teams, each composed of one doctor and two nurses, but the ultimate target is 60 such teams. Denmark cannot alone supply as many as 60 doctors trained in B.C.G. work, and such experts are therefore being recruited in Norway and by sending doctors from various other European countries to Denmark, where they are initiated into the technicalities of this work. In principle everyone from the age of 0 to 80 is eligible for B.C.G. vaccination provided he or she is tuberculin negative, but as—in Poland, at any rate—practically everyone over the age of 25 is tuberculin-positive it is under this age that this work is confined in practice. This vaccination costs only about sixpence per head.

In order to provide an adequate supply of fresh vaccine the Danish Red Cross has purchased three aeroplanes to carry it to different parts of Europe. In Yugoslavia the Danes have handed over their work to the Yugoslav Government after

working in this country for nine months. In the *Journal of the Danish Red Cross* for October Dr. Henningsen points out that in the past half-year the Danish Red Cross has examined about half a million persons, each of whom was dealt with three times. Tuberculin-testing is so well organized that 1,000 persons can be tested by the same nurse on the same day. Between 1,500 and 2,000 persons have been examined every day by each team, and in a recent interview in *Morgenbladet* for Oct. 28 the President of the Danish Red Cross, Kai Hammerich, refers hopefully to the prospect of vaccinating a million persons every month.

So we see that after twenty years of research and mass experiment the Danes have not only made out a very convincing case for B.C.G. vaccination but have also made it an article for export. What of the attitude of my fellow countrymen in England to B.C.G.? Masterly inactivity verging on the sublime? Or on the doddery?—I am, etc.,

Sunnfjord, Norway. CLAUDE LILLINGSTON.

Intravenous Procaine

SIR,—Dr. Peter Parry (Oct. 25, p. 669) refers to intravenous injections of procaine, saying that "the recommended dose of 10 ml. of 1% solution can be much exceeded with apparently complete safety." It should be realized that it is not the total dose which matters but the rate of injection. Procaine is rapidly broken down in the blood stream by the enzyme procaine esterase into diethyl-amino-ethanol and *p*-amino-benzoic acid. If the rate of injection is greater than the rate of hydrolysis, the concentration of procaine in the blood stream will rise and cause toxic symptoms in the following order: tachycardia, muscular twitching, convulsions, respiratory failure, death.

In the average fit adult tachycardia usually appears if the rate of injection exceeds 20 mg. per minute, and as a general rule this should not be exceeded. If an overdose has inadvertently been given, the intravenous injection of a short-acting barbiturate such as soluble thiopentone is the best treatment. The barbiturates not only act as anticonvulsants but appear to have a true antagonistic action to the analgesics containing the *p*-aminobenzoic-acid grouping.—I am., etc.,

St. Albans, Herts C. LANGTON HEWER.

Peptic Ulceration

SIR,—The annotation (Oct. 18, p. 621) on the findings of Gibbs perpetuates two widespread fallacies to which grave exception must be taken. (1) Radiographic "evidence" of healing. Nothing is more illustrative of the divorce of radiography, indeed of clinical medicine, from morbid anatomy than the belief that if *x*-ray evidence of ulcer disappears the ulcer is healed. In the case of gastric ulceration, endoscopy will show unhealed ulceration six or twelve months after *x*-ray signs have disappeared. Morbid anatomists of the living—surgeons—confirm this also in the case of the duodenum. The pertinent question is raised, "What is the basis (*a*) of the *x*-ray appearances of ulceration and (*b*) of the symptoms?" The classic symptom-free intermissions with a persistently unhealed ulcer are interrupted by periods of "activity." In what does this consist? Extension of the ulcer? No, a symptom-free ulcer of the stomach may slowly extend to an enormous size. The answer is simple: both symptoms and almost entirely the *x*-ray signs are produced by periodic flares of circum-ulcerous cellulitis.

The genesis of pain by the resultant interference with the musculature and gastric tension surely has been adequately established by numerous clinical workers such as Hurst, Ryle, Douthwaite, and others, though the idea of hyperchlorhydria burning the sore in the stomach seems ineradicably widespread still. The gastroscope establishes beyond doubt the source of occult blood as the swollen inflamed mucosa around the ulcer, though the common belief is an origin in bleeding granulations not shown endoscopically. Indeed the only symptoms arising from the ulcer itself are massive haemorrhage from erosion of large arteries and acute peritonitis from perforation. The oedema of mucosa and musculature together with muscular contracture exaggerate enormously the *x*-ray crater. Careful examination of the lesser-curve outline shows that the excrescence is in reality largely an appearance produced by a filling defect due to oedematous mucosa. With the subsidence of the oedema symptoms rapidly disappear; next the occult blood ceases; finally the *x*-ray crater, with all attendant rigidity spasm, etc.

The gastroscope, however, tells a most disillusioning tale. Healing of the flat area of epithelial deficiency, now symptomless and signless, may take a further six, nine, or more months before safe epithelialization is attained, even with the most stringent and irksome medical treatment. These facts are readily proved in cases of gastric ulceration; there is no reason for doubting that they apply equally to the duodenum. All, therefore, that can be claimed for radiography is the demonstration of increase or recession of circum-ulcerous inflammation. The definition of "activity" of an ulcer might be stretched to include this most characteristic phase of the condition, but the claim to demonstrate "healing" must be emphatically rejected.

(2) The other objection one must raise is in a large part conceded by your review—that the test-meal by any technique gives anything resembling a realistic demonstration of gastric secretion. How indeed can it when it concerns itself solely with hydrochloric acid? It may be that this secretion is to some extent parallel with that of the enzyme, but it is a very unsafe assumption. The reverse of this assumption leads to one of the pathetic illusions of medicine (like the instantaneous sterilization of the skin by a dab of antiseptic before a hypodermic injection). The patient has achlorhydria: all that is necessary to restore gastric function is to administer a few minims of dilute hydrochloric acid at intervals throughout the day. Pepsinogen *here*, it is presumed, is secreted normally. Admittedly more difficult and tedious, the estimation of peptic activity of gastric secretion is surely the truly relevant factor, for which one will search in vain for attention in the consideration of peptic ulceration; instead of which general attention is universally directed to neutralizing an acid which one presumes eats holes in the stomach and duodenum. The statement is made that concentration of HCl above 0.08% produces no increase in peptic activity. What then becomes of the simple faith in hyperchlorhydria? Until attention is turned from acid-and-alkali-test-tube theory and practice in peptic ulceration to some real indication of secretion it is not to be hoped that much advance can be made in either.—I am, etc.,

London, W.1. C. JENNINGS MARSHALL.

Education for General Practice

SIR,—Dr. James M. Taylor (Nov. 1, p. 706) makes a plea for the medical student to be employed as a nursing orderly at the same time as he is engaged in dissecting the cadaver. It is as well to recollect that the appalling mortality from puerperal sepsis persisted unabated in the lying-in wards of the Vienna hospitals until Semmelweiss put a stop to this route of cross-infection. Until the student has thoroughly appreciated in his surgical training the need for rigid asepsis, he is safer out of the surgical wards. In any event the study of anatomy is a full-time task and will not be made less burdensome by devoting precious time to sweeping floors and emptying bedpans.—I am, etc.,

Southsea, Hants. J. A. SEYMOUR-JONES.

The G.M.C. and Medical Education

SIR,—Dr. C. E. S. Flemming (Oct. 25, p. 669) says my letter on radical revision of the curriculum "lands us in a quandary." Patients whose rectal cancers are examined too late in the disease are in a much worse one. Such are common under the present education. My gravamen is that the student of medical science is *not* taught "those things that he *will want to know*," and that the art of medicine, which is half of general practice, needs unfolding in the impressionable years in hospital. The letter of Dr. James Taylor (Nov. 1, p. 706) gives cogent support to my plea for educational reform, and offers an admirable practical suggestion. A panel of G.P. tutors would, he claims, be mutually beneficial to student and teacher. It would counteract the degradation of the family doctor which he so poignantly describes.

Dr. Flemming asks whether the young doctor would find effective help at a health centre. No, the name is a misnomer

for a fortuitous collection of doctors having no intentional physiological bond. It will reduce, not raise, the prospects of the average patient. If a doctor is any good, his patients want him, having chosen him and put their faith in him. If patients cannot do this last, then half his healing power vanishes. When a doctor takes a pride in his practice he will not welcome patients being bandied about from one to another. Undivided loyalty is part of the good doctor–patient relationship.

The student needs a practical training to cope with common disease and to lead his flock in the cult of health. The complexity of modern medicine points to a partnership for the average young doctor and urban practice. This includes the incentive of owning the practice, and some degree of competition helps to "ginger up" effort. Conditions of pay, etc., must encourage *quality*, not mere *quantity*, of work.—I am, etc.,

Bristol. A. WILFRID ADAMS.

Belladonna Poisoning

SIR,—In their article (Oct. 18, p. 611) on this subject Flight Lieutenants M. Hamilton and A. B. Sclare quote Glaister (1944) as stating that cases of accidental poisoning by belladonna preparations are comparatively rare. A brief record of four cases that have come to my notice may therefore be of interest.

CASE REPORTS

A woman aged 50, soon after taking her usual drink of herb tea, became strange in manner, rambling and talking to herself, and fumbling aimlessly with the buttons of her clothes. She was found to be suffering from belladonna poisoning, the deadly nightshade having evidently been accidentally included among the herbs. Although there was no alarm as regards this patient's life, she was badly shaken for a week or two and never quite regained her previous health.

A man aged 62 was in the habit of treating attacks of gout affecting his great toe by rubbing in the liniment of belladonna. One day he rubbed in linimentum A.B.C. (alcohol, belladonna, and chloroform) in addition. This apparently increased the absorption, as on the following morning he had the typical low muttering of belladonna poisoning. He had no recurrence and no ill effects.

A man was about to have a lipoma removed by a relatively inexperienced operator. I looked in to supervise just after the injection had been given, and found the patient a trifle fidgety and muttering to himself. The pupil was seen to be dilated. The solution that had been injected was inspected, and it was found that by mistake an eye lotion containing atropine had been used. Within a few hours this man had a temperature of 106° F. (41.1° C.). He made a rapid recovery.

A consulting physician informed me that he had been called in to a case of pneumonia as the patient had become delirious. The type of delirium suggested belladonna poisoning, and he found that the medicine which was being given contained belladonna. This was stopped and the patient recovered.

These cases all occurred during the six years 1911 to 1917, and I have not seen a case since then. The symptoms are so characteristic that the condition can be recognized at a glance; they are clearly described in Hamilton and Sclare's article.—I am, etc.,

Bradford. PETER MCEWAN.

SIR,—When I was R.M.O. at what is now called the Princess Beatrice Hospital two boys about 15 came into casualty. One was continuously talking quite incoherently; the other knew nothing of the patient but was doing the good Samaritan by taking him to hospital. The patient's pupils were noticed to be extremely dilated. He was treated for belladonna poisoning and quickly recovered. It turned out that he was a chemist's boy whose job it was to wash bottles, and he tasted some sticky black stuff that looked like liquorice and tasted sweet (? belladonna and glycerin).

During the last war when M.O. of a tube shelter I was called to an old lady who was talking incoherently, and it was suggested that drink might be the cause. Thinking of a possible central nervous disturbance I looked at the pupils, which were much dilated but equal. I thought of belladonna poisoning, and her pockets were searched for medicines or tablets. Eventually she was found wearing belladonna plasters on ulcerated varicose veins.

It might seem to be advisable to tighten up the regulations for the sale and dispensing of belladonna. Our friends the Russians have set us an example in this direction. In Archangel in 1916 one of our party had lumbago and we thought of an application of belladonna. A fellow M.O. and I hunted the chemists' shops exhibiting our passports, red crosses, etc., but to no avail. Regulations were regulations, and only a Russian doctor's prescription would be recognized. The last chemist we went to was a friendly soul who asked us whether we really wanted belladonna, and we replied in the affirmative. He advised us to go to the beauty and cosmetic shop round the corner, where, he said, we could get a pound without any permit at all. We took his advice and carried off the goods.—I am, etc.,

London, N.1. LINA M. POTTER.

Genetics and Science in the U.S.S.R.

SIR,—The leading article on the Lysenko controversy (Oct. 18, p. 616) contradicts itself to its own destruction as follows: In the fifth column of the article Darlington is commended for putting on record the "facts" of the liquidation of certain Soviet biologists and scientists since 1928, when "Marxist orthodoxy began its ideological incursions into the domain of science," Lysenko being the "new genetic prophet." At the bottom of the third column the article states that "the Lysenko school has many opponents" (meaning Soviet opponents). Therefore either the liquidation was ludicrously inefficient, or else it never happened. Further, how can one have both an "iron curtain" and also the detailed knowledge of Soviet affairs claimed by such as Darlington? These aspects of this and similar matters are irreconcilable.

The whole matter has recently been discussed in three articles in *Modern Quarterly* of Autumn, 1947, in which reference is made to an earlier article of Darlington's in *Discovery*, 1947, 8. He is quoted as saying: "These are no longer questions which can be argued about in Russia. All those who have been prepared to argue have been put away." Yet "the Lysenko school has many opponents"!

I conclude that the *B.M.J.* article is simply another set-piece of anti-Soviet pyrotechnics. Fireworks make much noise, but have little effect on any structure of solidity. And one looks foolish (at best) in praising Hudson and Richens for being "clear, temperate, and impartial" and then falling so obviously short of that standard oneself.—I am, etc.,

London, N.W.11. R. R. WILSON.

SIR,—In the issue of Aug. 30 (p. 339) the editorial policy of the *British Medical Journal* was stated to be governed by "a sincere desire to inform British readers of the advances and contributions of Russian medicine." As one who deplores the scarcity of news of these matters in the British Press, I heartily welcomed this declaration, and it was with keen anticipation that I hastened to read in the *Journal* of Oct. 18 (p. 616) your leading article devoted to the important genetics controversy in the U.S.S.R.

I found, however, that the article omitted to mention the continued official recognition and encouragement of orthodox Mendelian genetics in the Soviet Union. Furthermore, it was rounded off by an acclamation, as a great service to truth, of the wild charges of Darlington published in such a periodical as the *Nineteenth Century*. Thereby, in my view, the editorial deserted the field of objective scientific criticism and entered that of political aggression against an allied nation. It may be helpful to those who wish to study this important subject objectively to mention the valuable series of articles contained in the current issue of *Modern Quarterly*. In one of these there is stressed, with evident pertinence, the importance of reading the original work of Hudson and Richens.—I am, etc.,

Croesfaen, Glam. J. B. ATKINS.

SIR,—The core of the article "Genetics and Science in the U.S.S.R." (Oct. 18, p. 616) is a quotation of the assertion by C. D. Darlington that Vavilov and others were imprisoned and murdered because of their scientific views. Hudson and Richens in their monograph, which is mentioned in the article as "clear, temperate, and impartial," could find no evidence that this was so, and surely the only verdict that a reasonable man can pronounce at the present time is one of "not proven."

The weaknesses of Lysenko's *New Genetics* and the inadequacy of the scanty experimental results on which it is based cannot be disputed. It is understandable, however, that the prestige of such a man, whose earlier work was so brilliant and achieved substantial practical success, should be great, and that he should have a considerable following among lesser biologists and agriculturists. We have had a somewhat parallel case in this country in MacBride, who held equally heterodox genetical views based on equally unsound experimental data, but who retained his chair and published books on the subject until his death. The non-scientific taunts that have been hurled by each side can also be paralleled in previous scientific controversies in other countries. Until Darlington produces his "sufficient documentary authority," or further evidence is forthcoming from other sources regarding the death of Vavilov, the only scientific attitude one can adopt is an open mind on the matter.—I am, etc.,

Orpington, Kent. F. H. BRIGHTMAN.

SIR,—There are a number of controversial statements in the leading article (Oct. 18, p. 616) on the above subject. I would like to refer to one general question, but I hope that the other points will be taken up by the experts in the different fields concerned. The statement which I would question is the one in which you attribute a comparatively recent growth to an alleged state of philosophic calm on the part of scientific investigators. Surely it was only in times before the introduction of the scientific method that the investigator was able to isolate himself in an atmosphere of "philosophic calm." Such a calm could only be derived from seclusion from the outside world and could only result in the elaboration of an idealist philosophy and dogmatic teaching. As a result of their energetic turning back to reality and their iconoclastic attitude to dogma, revolutionaries such as Newton and Darwin were able to dispel the philosophic calm of the armchair "investigator." From then on, to borrow your own phrase, idealism could only be preserved for scientific workers by an "alogical" process—a divorce between religious views on the one hand and the practical results of their own investigations on the other.

It was by an application of the scientific method to political economy, similar to that which Newton and Darwin had achieved in physics and biology, that Marx and Engels were able to dispel the philosophic calm of the pre-Marxist economists. The essence of their teaching was a refusal to recognize the immutability of the present structure of human society, just as Darwin refused to recognize that the world had been created precisely as he found it in the 19th century. Dialectical materialism has often been dismissed by those who do not understand it, or who find it inconvenient, as a "new religion." There is no doubt that the introduction of the use of meteorology in the countries of the Middle East and India to regulate crop sowings in lieu of reference to the priest is regarded by some as the substitution of one religion for another, since to the uninitiated it is just another mystery. I do not think, however, that this should be regarded as a valid reason for classifying meteorology with alchemy and Zoroastrianism rather than with geology and botany.

You state that doubtless a Communist (among others) tacitly accepts some form of realist or material philosophy. Surely, however, it is evident that, whereas this acceptance may be tacit in the case of a professed idealist—e.g., Oliver Lodge—in the case of a Communist scientist—e.g., J. B. S. Haldane or Joliot Curie—this acceptance is by no means tacit. On the contrary, it is clearly and explicitly expressed by the mere fact that the scientist in question professes himself a Communist and thus declares publicly that he has accepted a materialist outlook.

The recent discoveries in atomic physics and spheres of dynamic biology such as genetics have made the mechanical materialism of the scientists of the last century appear inadequate. This has resulted in a turning back towards idealism, as evidenced by the popularity of neo-mystical writers such as Jung. For those, however, who wish to continue to rely on the experimental and scientific method rather than to seek to explain the natural phenomena of psychology and sociology by some hypothetical "*Einsicht*," dialectical materialism offers a satisfactory method of arranging the facts resulting from experimental work, a method which, by seeking to expose the contradictory forces operating in a natural process, reveals its dynamic nature. Thus the attention of the dialectical materialist is focused, not upon the ideological conflict between the protagonists of "nature" and "nurture," but upon the organism itself as the seat of the interaction of these material forces.

It is one of the essentials of dialectical materialism as stated by Marx, Lenin, or any other of its main exponents that no theory can be wholly adequate to its purpose and that it will need revision or perhaps complete replacement as new facts are discovered. This applies equally to the theories which Lysenko uses to explain his results and for which no permanent validity can be claimed. The best method of assessing the work of such scientists is, surely, not to accuse them without adducing any material evidence of liquidating their opponents, but rather to point to the successes which have been achieved by the use of their methods in acclimatizing useful plants to the wastes of the Arctic or of the Kara Kum and in evolving new strains of domestic plants which will help to banish for ever the spectre of famine which has haunted mankind for so long.—I am, etc.,

St. Mary Cray, Kent. BRIAN H. KIRMAN.

The Extent of Neurosis

SIR,—Was there really so little neurosis in the Victorian age as Dr. H. Crichton-Miller (Oct. 25, p. 669) tells us? And has fear, economic and social, really been gradually "eliminated"? and also the response of effort to the fear motive? If developments, as visualized by Dr. Crichton-Miller, should have reduced the extent of neurosis, why have they not?

The replacement of individual anxiety by passive solidarity with the group, and of individual effort by "talk of strikes," could not have led to increased anxiety and conflict unless the individual would subconsciously recognize that his striving for collective security through constitutional channels is either wicked or unwise. Do the working people really suffer from this conflict?—I am, etc.,

London, N.W.11. B. SAALER.

Treatment of Varicose Veins

SIR,—I have read with much interest the article by Prof. A. M. Boyd and Mr. D. J. Robertson (Sept. 20, p. 452) on the passage of sclerosing fluid through communicating veins of the thigh and leg when injections are made into varicose veins. But I do not think that sclerosis of a deep vein ever occurs in consequence, and it has not occurred in over 20,000 injections that I myself have given. Oedema of the lower leg *may* occur, but this is due to lymphatic block caused by periphlebitis. Even this will not occur if the leg is firmly strapped up with "flexoplast," which has been my invariable practice for many years now after injecting all but the very smallest leg veins. In fact I consider that it is an essential part of the treatment.

The two main communicating veins are at the junction of the middle and lower thirds of the thigh and at the junction of the middle and lower thirds of the leg for the internal saphenous vein. Of these, the latter is the more important and the more difficult to sclerose. It is usually below this that ulcers and other complications usually occur. If I find it patent after the injection of the main trunk, I inject it directly with 2 ml. quinine and urethane with the leg in a horizontal position, and after pressing on the vein for some minutes I apply strapping to the whole leg. This is usually sufficient to sclerose the communicating vein and the trunk below it, but on occasions I have had to resort to a "twin" injection of "lithocaine," 5 ml., and quinine and urethane, 3 ml., and even this massive and powerful injection has failed to produce any sclerosis in the deep veins, though the local result has been excellent. A running stream will not freeze as readily as the stagnant ditch near it, and it is probable that the increased flow in the deep vein quickly dilutes the sclerosing fluid and renders it innocuous.

I agree with much that Mr. Harold Dodd (Nov. 1, p. 708) writes, especially when he stresses the importance of varicose veins. But I fail to understand his objection to clinics. We who work in them probably see ten times as many cases of varicose veins and their complications as come to a hospital surgeon's out-patient clinic. I once had to deal with 104 in one afternoon, and I rarely see fewer than 40. A considerable amount of experience is thus built up.

I find that injection treatment *properly performed* will give as good results as ligation with injection and better than ligation alone. Many of the cases that come to me have scars of operations—in

one case five—and are in a worse condition than they were before their operations. Moreover, operation is not without its danger to life and limb, and many fatal results have been reported. In seventeen years that I have been doing injections I have had no fatality nor lost a limb. Injection therapy is so simple and safe that scarifying the intima, as described by Mr Riddock, seems to be unnecessary and even barbarous, though it may give excellent results when performed by his skilled hands. Nor is it necessary to pass a long catheter down a vein to enable a sclerosing fluid to reach its furthest point. If the injection is made into the highest part of the vein, simple massage will drive a wave of fluid down the main trunk, its branches, and also into the communicating veins. In this way the complete internal saphenous system can be soundly and lastingly sclerosed from the groin to the ankle.

But I will admit that in a small minority of cases injections seem to have little or no effect. These unfortunate people must submit to operation or wear stockings for the rest of their lives. —I am, etc.,

London, S.W.7. R. SIMPSON HARVEY.

Balantidiasis

SIR,—I have read with considerable interest Dr. M. Shun-Shin's article on "Balantidial Dysentery in Rodriguez and its Treatment with Mercury Biniodide" (Sept. 13, p. 417). I should like to associate myself with the suggestion of Dr. Shun-Shin, and the following case report would not be out of place.

A Hindu male aged 40 consulted me on Oct. 9, 1947, for an attack of intractable diarrhoea of three months' duration, the number of motions being 20–30 per day. Stool examination revealed *Balantidium coli* and giardia cysts. He was put on emetine injections 1 gr. (65 mg.) daily, methylene blue 2 gr. (0.13 g.) in capsules twice a day, and mepacrine tablets, one tablet thrice daily for five days. With this treatment, though the giardia cysts disappeared, the balantidia continued to be present in highly motile forms. Then on the suggestion of Dr. Shun-Shin I gave an intramuscular injection of 1/6 gr. (11 mg.) of biniodide of mercury, and stool examination four days later revealed complete absence of the ciliates. In spite of negative stool findings another injection was repeated, and two subsequent stool examinations on different dates failed to show the balantidia. The patient at the time of reporting had been passing 2–3 normal motions per day and was feeling very well.

The application of hydrarg. biniodide in the treatment of balantidiasis has opened up new prospects of cure and eradication of an otherwise very intractable and persistent infection, and further reports in support from members of the profession would be welcome.—I am, etc.,

Santipur, West Bengal. S. PRAMANIK.

Anticoagulants in Coronary Thrombosis

SIR,—The annotation on dicoumarol (Oct. 25, p. 662) and Dr. John T. Maclachlan's letter on heparin for coronary thrombosis (Nov. 1, p. 709) will, I fear, raise hopes which are doomed to bitter disillusionment. I have nothing but praise for the action of dicoumarol in peripheral phlebothrombosis and thrombophlebitis. Not one of my cases has developed an embolism, and I have a strong impression that the local manifestations subside more rapidly. Although there has been an alarming drop in the prothrombin index in one or two cases, there have been no untoward results.

With this experience of dicoumarol it was with high hopes that I commenced to use it in cases of coronary thrombosis a few months ago. The first two cases in which I used it had each had more than one lung infarct before treatment was started, and each had phlebothrombosis in one leg. Despite a satisfactory drop in the prothrombin index *both patients developed further lung infarcts.* One occurred when the index was 54%, the second while the index was rising over a period of three days from 43% to 74%. In each case the illness ran a particularly stormy course, and occasioned greater anxiety than the average patient with coronary thrombosis and lung infarction. In addition to these two cases two patients with hypertensive heart failure and lung infarct were given dicoumarol. One of them had two further infarcts during the treatment, the first on the day when his prothrombin index stood at 76%, the other with a prothrombin index of 43%. The second patient had an extension of thrombophlebitis during an intermission in her treatment, and had another lung infarct after the treatment was resumed.

The fifth patient to receive this drug completed my discomfiture and disillusionment. A woman aged 57 who suffered from hypertension with angina of effort was admitted to the ward for thiocyanate treatment. On the fourth day, when her blood pressure had fallen from 220/110 to 180/94, she developed a severe attack of coronary thrombosis. Within half an hour of the onset of her pain she had profuse haemoptysis, attributed at the time to pulmonary infarction, though necropsy subsequently showed that it was due to pulmonary congestion. Thiocyanate was immediately discontinued and dicoumarol was started two days later. On the eighth day after her attack (sixth day of dicoumarol treatment) she seemed to be progressing satisfactorily, and her prothrombin index stood at 38%, when she suddenly had another attack of coronary thrombosis and died after a few hours. Necropsy showed the original thrombus in a coronary artery with widespread recent extension, which, according to the pathologist, had taken place a few hours before death.

This last case makes it clear that the blood coagulability is not the only factor which influences extension of a coronary thrombosis, perhaps not even the most important factor. Figures which I hope to publish in due course, from a series of 242 cases, indicate that the mortality from all causes within the first three months is closely related to the degree of shock accompanying the attack itself. In 154 cases there was no shock, though pain in many was severe; the mortality in the first month was *nil* and in the first three months was only 2.4%. In 88 cases with shock the mortality was 27% in the first month (29% at ages below 50, 19% at age 50 to 59, and 48% at ages over 60).

It would seem, therefore, that the most hopeful line of attack lies in the early and effective treatment of the initial shock. I am experimenting along these lines, making use of a slow intravenous glucose–saline drip to which an ampoule of "cardophylin" (0.48 g.) is added by injection into the rubber tubing. Treatment has so far been confined to seriously shocked patients, and they have been given morphine when required for pain. While it is too early as yet to make any claims, the results so far are highly encouraging. There have been two dramatic recoveries in patients whom I regarded as moribund, and a third striking recovery in one whom I thought seriously ill though not hopeless. One of these three patients later developed an embolism at bifurcation of abdominal aorta. —I am, etc.,

Glasgow. ALBERT A. FITZGERALD PEEL.

Knee-jerk Examination

SIR,—I have been using a simple method of eliciting the knee-jerk during the last few years. Recently other colleagues to whom I have demonstrated it have shown interest. Their interest has prompted me to describe it. In this method no percussion hammer is required.

The middle finger of the left hand is placed carefully over the patella tendon, and then the middle finger of the opposite hand is brought sharply down on to the dorsum of the left middle finger as in percussion elsewhere. A positive response is felt by a tightening of the tendon under the examining finger.—I am, etc.,

London, W.5. J. J. SHIPMAN.

Yeast Extracts and Fat Absorption in Sprue

SIR,—I was interested to see the conclusions of Drs. D. A. K. Black and L. P. R. Fourman (Oct. 25, p. 645) regarding the effect of yeast extracts on fat absorption in sprue. Cases such as they referred to were in the Sprue Research Unit at Poona where their fat balances and treatment were carried out under my direction. The biochemical estimations were performed by Drs. Black and Fourman as described by them. In a group of cases treated by yeast extract, examined statistically by Mr. Dilwater, the period of treatment was shown to coincide with improvement in fat absorption. These cases had been previously treated by parenteral liver extract in large doses, parenteral nicotinic acid, and riboflavin shortly before yeast extract was used. In my view this finding showed that the whole pattern of therapy may have decreased fat-excretion, not the yeast extract alone, as has been concluded. For example the possible necessity for previous or coincidental liver therapy for the reduction of fat excretion on yeast extract is not considered by them in their article.

The issue could be easily settled by the use of yeast extract alone. I would like to ask if Drs. Black and Fourman have investigated cases other than those on the Sprue Research Unit as yeast extract alone was never used on these cases. I think

relevant to point out that yeast extract was not used on patients in the relapse phase of the disease, and that careful clinical observation revealed no beneficial effects from it during remission.—I am, etc.,

Staines, Middlesex. K. D. KEELE.

Hospital Treatment of School-children in Shropshire

SIR,—I wish to bring to the notice of the profession at large a situation which has recently developed in Shropshire, which this Branch regards as one of the utmost gravity in its bearing on the everyday work of the general practitioners of the area, and the implications of which are widespread and ominous. The Education Act, 1944, imposes on local education authorities "the duty to make such arrangements for securing the provision of free medical treatment for pupils in attendance at any school or county college maintained by them as are necessary for securing that comprehensive facilities for free medical treatment are available to them."

The Education Committee of the Shropshire County Council, in drawing up its scheme, has decided that all hospitals with which it proposes to enter into arrangements for the treatment of school-children shall comply with the following conditions :

"(1) There shall be on the staff of the hospital a resident medical or surgical officer, or both, according to the type of case to be dealt with.

"(2) Treatment for eye, ear, nose, and throat conditions shall only be carried out by, or under the supervision of, a specialist in the appropriate condition, who shall be of consultant status.

"(3) Surgical cases of all categories, whether requiring operative treatment or not, shall only be treated by, or under the supervision of, a Fellow of the Royal College of Surgeons of consultant status, who will himself be expected to carry out any operative treatment required unless it is of a very minor nature.

"(4) Medical cases shall only be treated by, or under the supervision of, a physician of consultant status."

It will be plain to all that the application of these conditions results in the complete elimination of the general practitioner from any part in the treatment of such children, which now may only be carried out in such hospitals as have an active staff of consultant status. In Shropshire this has resulted in a remarkable state of affairs. The county is a large one, covering an area of 1,346 square miles, and having a population of 262,000. Within its borders there is only one hospital available for general medical and surgical cases which fulfils the conditions laid down. It contains 280 beds, is already hard pressed for accommodation, and has long lists of patients awaiting admission—nearly 500 in fact.

On the other hand Shropshire is fortunate in having no less than eleven smaller hospitals of the "cottage hospital" type, widely distributed over the county, with a total of about 250 beds, staffed by the general practitioners residing in their vicinity, and in a high state of efficiency, with consultants available when expert assistance is required. In these hospitals much excellent work of an unspectacular nature has been and is being carried out to the satisfaction of the public, the convenience of patients and their relatives, and, not least, to the relief of the major hospital.

As a result of what I can only describe as the deplorable decision of the local education authority, taken without any approach having been made even to the authorities of the main hospital, these 250 beds will no longer be available to children of school age, since the edict has gone forth that none may treat them who is not of consultant status.

I ask you, Sir, is not this an outstanding example of planning gone mad ? And I believe that when the matter is raised at the Representative Meeting it will be dealt with in such a way as to convince those concerned and any others—if such there be—of a like mind that the profession will not submit to such treatment.—I am, etc.,

Wellington, Salop. H. W. BAMBRIDGE, President, Shropshire and Mid-Wales Branch.

Fowl Paralysis and Poliomyelitis

SIR,—I was most interested to read Dr. J. A. Goodfellow's account of his experiments on fowl paralysis (Oct. 11, p. 586). In 1937 I saw a child with poliomyelitis on an isolated farm in Herefordshire and was surprised to find a hen lying paralysed in the farmyard at the same time. There were no other cases of infantile paralysis notified in the district and no more chicken paralysis on the farm. I removed the brain and spinal cord from the hen and sent these to the National Hospital for Diseases of the Nervous System, Queen Square, for histological examination. It was reported that no abnormality could be found.

No doubt the simultaneous occurrence of the two diseases was a pure coincidence, especially as fowl paralysis is not an uncommon disease, but it would be interesting to hear from country doctors whether such a phenomenon is often observed. —I am, etc.,

London, S.W.1. F. L. KING-LEWIS.

Homosexuality and "Sexual Trauma"

SIR,—Those who are concerned with the social and clinical problems of homosexuality will welcome Mr. D. Stanley-Jones's able refutation (Oct. 25, p. 671) of the theory that seduction in childhood or early adolescence is an important aetiological factor in these cases. In addition to his cogent reminder of the frequent occurrence of homosexual experiences amounting to "seduction" in the early life-history of many well-adjusted heterosexual adults it is possible to adduce further evidence in support of the view that the "traumatic" significance of sexual seduction or assault in childhood has been greatly over-emphasized. The usual tendency has been to argue *a priori* on the basis of certain subjective ethical and moral concepts that, because such assaults are deemed to be morally "wrong," therefore they cannot fail to produce disastrous effects on their victims.

(1) As A. J. Rosanoff[1] has stated, "such evidence as is available would seem to indicate that such seduction can only be of lasting effect if its direction corresponds with the inherent sexual tendencies of the subject"—i.e., psychiatric investigations tend to show that any "lasting effect" is produced, not by the seduction, but by (*a*) constitutional and endocrine factors, (*b*) psychosexual immaturity resulting from disturbances in the child–parent relationship in early childhood, or (*c*) more probably (in the light of contemporary research into psychosomatic interrelationship) a combination of both factors.[2] In all true adult homosexuals who have been thoroughly investigated there has been some indication that one or both of these factors have long been present *prior to* any seduction or assault. Furthermore, psychiatric experience shows that many true homosexuals have never been subjected to seduction in childhood and, indeed, have never had any physical relationship whatsoever.

(2) Psychiatric investigations have established beyond doubt that, in very many cases of childhood "seduction," it is the so-called "victim" who is in fact the seducer, and that the sexual act with the adult may be actively sought by the child as an expression of the latter's unconscious impulses and fantasies[3 4] —i.e., that a predisposition in the child may not infrequently be the cause of the alleged seduction. K. Friedlander[5] states that "it is very rare for boys who do not already display homosexual tendencies to be exploited in this way. . . . More often than not, young boys will offer themselves, if not in words then by gestures, to older men."

(3) There is considerable evidence that the large majority of children and young adolescents who have been seduced or assaulted, either by adults or by other children, and whether the act be homosexual or heterosexual, show in adult life no sign whatsoever of sexual or psychological maladjustment or abnormality. Doshay[6] found that, among 108 unselected cases who between the ages of 7 and 16 had been involved in sexual delinquencies, there was "not a single instance of a known sex violation in adult life"; and of 148 additional cases, all of whom at the same age had been involved in both sexual and other offences, only 8 committed known sexual offences (of a minor type) in adult life, whereas no less than 25% committed further non-sexual delinquencies. Doshay states that the most frequent sexual offence (in over 40% of his cases) involved sodomy with adult men, older and younger boys, or with girls, and observes that "these practices . . . ought not, when occurring among juveniles, to be regarded in too morbid a light, nor should the boys be considered 'perverts' or 'homosexuals,' as noted in some of the texts. The vast majority of offenders engage once or a few times in these unwholesome affairs and turn from them spontaneously with disgust, shame, or fear of

exposure. . . . Of 256 cases, only two . . . revealed such deep interest in and craving for homosexual practices as to warrant the designation of 'homosexual'" (and, one may add, the assumption of a fixed inherent predisposition). These findings are largely confirmed by the very thorough investigations of Bender and Blau,[4] and Rasmussen (in girls).[7]

(4) Finally, in attempting to evaluate, in adult homosexuals, the aetiological significance of alleged early seduction or assault (particularly where the history is based on relatives' accounts or official records of the patient's evidence as a child), it is necessary to bear in mind the notorious unreliability of children's evidence, especially with regard to sexual matters, which has long been stressed by many medico-legal authors.[8 9 10] The child is frequently incapable of differentiating reality from fantasy (and this may equally apply to the adult's "reminiscences"). Furthermore, the relatives of an adult homosexual who is involved in legal action may be very ready to assert, in reply to legal or medical inquiries, that such a "sexual trauma" was responsible for his present predicament, just as others may, with equal force, proffer "evidence" of physical trauma as the alleged cause of cancer or of mental illness.—I am, etc.,

London, S.W.3. R. H. AHRENFELDT.

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The Bedtime Meal

SIR,—"Milk and biscuits at bedtime are the cause of tonsils and adenoids"—is there any truth in so extreme a statement? A bedtime meal is followed, like any other, by the gastro-colic reflex. That in its turn is followed shortly by the filling of the rectum. But, except in infants, there the sequence ends. The final event, evacuation, is discouraged in early childhood and its inhibition becomes habitual. The rectum remains full all night, as is now usual, instead of empty, as is normal. Thus the astringent functions of the lower bowel are in play for some hours. Nothing more happens until, after breakfast, the rectum is filled still further and the sequence terminates in the ordinary way with the morning action. But the unduly firm consistency of the stool calls for a lubricant, which is supplied. The call for mucus is responded to—in the rectum, where it is needed—but the response to that call does not discriminate accurately between the sites needing supply. The nose and throat are apt to receive mucus at the same time as the rectum.

If the only result of the twelve-hour constipation were an occasional sneeze or a brief rhinorrhoea, the penalty might be thought negligible. But the constantly recurring exudation of a little mucus makes the nasopharynx more liable to receive and harbour infective organisms. That chronic catarrh should result and the tonsils enlarge, as armament factories do in war-time, is to be expected—in the way of attack and defence.

To enucleate the tonsils because they have responded to the call is nowadays seen to be bad practice; for, intact, they protect the child—against infantile paralysis certainly and, likely, against a host of other pathogens. Removal is reserved for any that are overwhelmed and stuffed with pus or "cheese" and for those few that are seriously obstructive. But *caveat sanitatis custos*. I have removed, thinking them guilty, tonsils which have proved innocent, and felt shame to take the county council's guinea. I tried to find consolation in Sir Thomas Browne: "Where I do him no good methinks it is scarce honest gain, though I confess 'tis but the worthy salary of our well-intended endeavours."

How come the children to tolerate the twelve-hour constipation? It is certainly because their food is denatured. From the wheat destined for bread half the offals are taken. That is 15% of the weight of the grist. From that destined for manufacturing flour all the offals are still taken, just as they were for the pre-war flour. All the crease-dirt is removed from both. "Offals" and "crease-dirt" are opprobrious words for items of our optimum diet. In the first are the cellulose, some of the semolina, and all the vitamins. The second consists of the minerals the plant has sucked from the soil and stored under the crease in the seed. Deprived of these the gut is languid. That answers the question.

If the child's supper were prepared from the whole grain, ground finely if you will, and made into any chosen form—bread, biscuits, wheaten porridge (though for that it should be merely broken into rather large fragments), or creed and made into frumenty, which is good but forgotten—and if before bed the final reflex of the digestive sequence, the action, were completed, all would be well. For this to happen there must be some interval. Theseus (*A Midsummer Night's Dream*) asked:

> "What dances shall we have
> To wear away the long age of three hours
> Between our after-supper and bed-time?"

That is too long, but Shakespeare's hint deserves attention in the nursery.—I am, etc.,

Holmes Chapel, Cheshire. LIONEL JAS. PICTON.

R.M.B.F. Christmas Appeal

SIR,—I gratefully acknowledge many generous contributions towards this year's Christmas Gift Fund, but we are still far short of the sum needed to ensure that all of our regular beneficiaries are remembered. May I make a further appeal to those readers who are in sympathy with our work and who have not yet sent a contribution to forward their donations to: Royal Medical Benevolent Fund, Christmas Gifts, 1, Balliol House, Manor Fields, Putney, London, S.W.15, as soon as possible, as the distribution of gifts is made some days before Christmas.—I am, etc.,

ALFRED WEBB-JOHNSON,
President, Royal Medical Benevolent Fund.

The Lazy Eye

SIR,—May I venture to suggest that the wider implications of the discussion as to the value of occlusion in the treatment of "amblyopia" in children merit further study. Recent surveys of recruits called up under the national service scheme show that 6–8% manifest defects of sight as gauged by (uncorrected) visual acuity of not higher than 6/18 (Snellens) in one eye. Thus, after elimination of congenital and other factors, some 5% of the young male population have by the age of 18 incurred an "amblyopia" associated with squint or high refractive error.

A large proportion of these men state that either they have never had their eyes "tested" or else that they have joyfully discarded their glasses at the first opportunity. The recent discussion held at Leeds by the School Health Service Group of the Society of Medical Officers of Health concerning "Ascertainment of Visual Defect in Children" (*Public Health*, 1947, **60**, 215) would indicate some of the ways to tackle this very real problem.—I am, etc.,

London, S.W.1. G. C. DANSEY-BROWNING.

Ourselves and the Russians

SIR,—You published (Aug. 30, p. 339) a leading article entitled "Ourselves and the Russians" in which you criticized an article in the Soviet periodical *Meditsinsky Rabotnik* of July 3, 1947. In the Soviet article Dr. Radbil had castigated the *B.M.J.* for what he described as its "sham political neutrality." At the time I was impressed by the spirited reply of the Editor of the *B.M.J.*, though the sneering manner in which Dr. Radbil was referred to personally made me wonder how the quotations from his article would have sounded in their original context. Unfortunately the *Meditsinsky Rabotnik* cannot easily be referred to in this country, and it was finally only owing to the courtesy of the Editor of the *B.M.J.* that I was able to see the Soviet article.

I have no desire now to open a discussion of the merits (or demerits) of either article, and, indeed, having read both articles, I would be perfectly prepared to defend either—

rather would have been until I opened the *B.M.J.* of Oct. 18 and read the leading article on "Genetics and Science in the U.S.S.R." (p. 616). This is an important subject, and Hudson and Richens have, as you say, performed a useful service in expounding the views of the opposing schools in their book *The New Genetics of the Soviet Union.* Dealt with in this "temperate and impartial" way, it would seem clear that Lysenko and his followers have allowed their enthusiasm for a new idea to outstrip the conclusions that can reasonably be drawn from their experiments. Dealt with in the manner of your leading article the only effect is to take the *B.M.J.* out of the class of scientific periodicals and align it with that section of the Press which is devoting itself to spreading international hatred.

What exactly did you wish to say? That Vavilov, Levitsky, etc., were sentenced for their scientific beliefs? If this was your intention, it is odd that you should choose as your witness Dr. Darlington, whose partiality is evidenced by his statement in *Discovery* of February, 1947, that "the leading Russian geneticists . . . have been liquidated in the course of this long political intrigue. These are no longer questions which can be argued about in Russia. For all those who have been prepared to argue have been put away." Hudson and Richens (whose book you praise) point out that Zhebrak and Serebrovski have been "consistent and fearless critics" of Lysenko and that many others, whom they name, have frequently published papers expressing the views generally accepted elsewhere. No, presumably your intention was the more generous one of providing stronger evidence for Dr. Radbil's next article.—I am, etc.,

London, W.1. RICHARD DOLL.

Medical Photography

SIR,—The letter from the Deputy Chairman of the Medical Group of the Royal Photographic Society (Nov. 1, p. 710) referred to the excellent reproductions in the photogravure plate in the *Journal* of Sept. 27, and made a plea for individual acknowledgment of the medical photographer. The gastroscopic pictures included in the plate were photographs made from paintings by Miss D. Barber, and unfortunately her name was omitted during the photographic process. I am glad of this opportunity to apologize for the omission, and I wish to support their request for encouragement of medical photographs—and for medical artists too. There is a real need for developing this ancillary service for hospitals, not only for illustrating publications and clinical meetings but also for aiding the long-term study of the natural history of disease. It is hoped that other county authorities will follow the example of the Middlesex County Council in appointing whole-time artists and photographers.—I am, etc.,

London, N.W.10. F. AVERY JONES.

POINTS FROM LETTERS

Edible Fungi

Major-Gen. A. H. HARTY (Bombay) writes: I read with interest the article in the *Journal* of Aug. 23 (p. 304) "Some Edible Fungi," by Dr. John Ramsbottom. . . . I remember reading some years ago in, I think, a popular magazine that if all the following points are satisfied the mushroom is certainly edible: (1) It must be gathered in open spaces—e.g., a wind-swept meadow; (2) the skin must peel readily from the cap; (3) the stalk must be solid and not hollow; (4) the gills must not touch the stalk—i.e., there must be a complete circular space, however narrow, between gills and stalk. I have myself eaten fungi which satisfy all these points, but have often felt, while discarding others that failed to do so, that I was being overcautious. Will Dr. Ramsbottom be pleased to give us some practical working rules, and to confirm or refute the four tests given above?

The Last Straw—Unholy Smokes

Dr. IAN N. SAMUEL (London, S.W.11) writes: Perhaps Dr. Stokes's (Nov. 1, p. 710) patients find solace in smoking to make up for their irritation in seeing his door covered with notices. Although I agree that it is an imposition to expect medical men to sign such forms as the pensioners' tobacco form, it is obvious that a refusal to sign hurts only the applicant: the bureaucrat remains unscathed. The other named persons empowered to sign the form are generally out of reach for the patient. I know the police won't sign, on the grounds that they have no personal knowledge of the applicant. . . .

Obituary

SIR ARTHUR STANLEY, G.C.V.O.

The Hon. Sir Arthur Stanley, G.C.V.O., G.B.E., C.B., died at his home in Eastbourne on Nov. 4 at the age of 77. He had been closely associated with St. Thomas's Hospital for twenty-six years and for an even longer period with the British Red Cross Society and the King Edward's Hospital Fund for London. His death brings to an end a long-sustained and unselfish devotion over many years to the welfare of the wounded and the sick.

The Hon. Arthur Stanley, third son of the sixteenth Earl of Derby, was educated at Wellington and began his career in the Diplomatic Service. He left the service for a short time to become private secretary to Mr. Balfour, but by 1895 he was third secretary in Cairo under Lord Cromer. In 1898 he was elected to Parliament by the Ormskirk Division of Lancashire, which he continued to represent until his resignation in 1918. His connexion with the King Edward's Hospital Fund for London began in 1908. He was made chairman of the British Red Cross Society in 1914, and two years later he was elected the first chairman of the Royal College of Nursing. When in 1917 he also became Treasurer of St. Thomas's Hospital he decided to leave Parliament and to devote his energies entirely to the care of the sick and of those wounded during the 1914–18 war. His services were recognized by a presentation in 1919, when Princess Christian paid tribute to his chairmanship during the war years of the joint council of the British Red Cross Society and the Order of St. John of Jerusalem. Edinburgh made him an honorary F.R.C.P. and Leeds awarded him its honorary LL.D. His devoted work for St. Thomas's Hospital and for the British Red Cross Society came to an end only in 1943, when failing health compelled his retirement.

W. H. KAUNTZE, C.M.G., M.D., F.R.C.P.

Chief Medical Adviser, Colonial Office

Dr. William Henry Kauntze died at Woking on Nov. 4 at the age of 60 after a painful illness courageously borne. Educated at Victoria University, Manchester, and London University, he graduated in 1911 and after holding resident appointments at the Manchester Royal Infirmary and in Salford he joined the West African medical staff in Nigeria in 1912. In the war of 1914–18 he served in both the West and East African Forces. In 1919 he was appointed senior bacteriologist and deputy director of laboratory services in Kenya Colony and remained there until 1932, when he was promoted to be director of medical services, Uganda. He had proceeded M.D. in 1921 and he was elected F.R.C.P. in 1945. In 1941 he was appointed assistant medical adviser to the Colonial Office and in 1944 became chief medical adviser. He was awarded the M.B.E. in 1918 and the C.M.G. in 1937. He was also a Knight of the Order of St. John of Jerusalem. As chief medical adviser to the Colonial Office he was *ex officio* chairman of the Honorary Managing Committee of the Bureau of Hygiene and Tropical Diseases from 1945 onwards, and in this capacity he was concerned with the publication of the *Bulletin of Hygiene*, the *Tropical Diseases Bulletin*, and the *Bulletin of War Medicine*.

Kauntze was a man with the highest ideals who never spared himself in the work of the service which he loved and to which he subordinated all things. After his appointment in London he travelled widely in the colonies, visiting Africa, the West Indies, and the Far East to see for himself conditions in these places and to discuss possible improvements. His capacity for work was very great and he drove himself relentlessly. His last tour in the Far East undoubtedly precipitated his final illness, and, although he was aware of this probability, his high sense of duty compelled him to carry it out. As a result of his journeys and his studies he was convinced that in the application of the principles of social medicine lay the solution of the tropical problem, and even at the end in periods when free from pain he strove to further this policy. With his deep insight into colonial problems he realized that for real success the co-operation of the local people was essential,

and he was a strong advocate for higher education in colonies and insistent that the standard be the highest attainable. He had no use for second bests. Convinced of the necessity of international action in matters of health, he was keenly interested in the building up of the World Health Organization and was a member of the British delegation at all meetings of the Interim Commission. Setting before himself only the highest standards, he expected the same lofty ideals from others, and it was a privilege and inspiration to work with him.—A.M.W.R.

FRÉDÉRIC F. BURGHARD, C.B., M.D., M.S., F.R.C.S.

Mr. Frédéric F. Burghard died in Cambridge on Oct. 31 at the age of 83. He had been on the staff of King's College Hospital from 1889 until his retirement in 1923, when he was appointed consulting surgeon to the hospital and emeritus lecturer in clinical surgery in the medical school.

Frédéric François Burghard was born on Feb. 27, 1864, and educated at Christ's College, Finchley, and at Guy's Hospital, where he was awarded the Treasurer's Gold Medal in surgery. He graduated with first-class honours in 1886, and took the London M.S. in 1887 and the F.R.C.S. in 1888, a year before he proceeded M.D. At Guy's Hospital he was resident obstetrical assistant, house-surgeon, and in 1888 surgical registrar. He was appointed assistant surgeon to King's College Hospital in 1890. It will be recalled that Sir Joseph Lister only retired finally from King's College at the end of the summer session in 1893. Mr. Burghard was promoted surgeon to the hospital in 1898, and in 1902 became teacher of operative surgery in King's College. He was actively concerned in the movement which led to the transfer of the hospital from Portugal Street, and in 1904 represented the Watching Committee of the Medical Board on the Building Committee of the new hospital at Denmark Hill. It was mainly due to his efforts that the various clubs and societies of King's College Hospital were amalgamated to form the Clubs and Societies Union of King's College Medical School. He was elected first president of the Union and held that office until his retirement. For many years also he was president of the hospital rugby football club. In his student days he had played for the Guy's Hospital XV.

During the 1914–18 war he was a colonel in the A.M.S., and consulting surgeon to the B.E.F. from 1914–16. In 1919 he became senior surgeon to King's College Hospital and lecturer in clinical surgery; three years later he was made director of surgical studies. At this time, too, he served on the committee of management of the hospital. Mr. Burghard was a member of the council of the Royal College of Surgeons of England from 1915 to 1923 and was for some years a member of the Court of Examiners. For many years he was one of the examiners in surgery at Cambridge and at London University. With Sir Watson Cheyne, Burghard wrote a *Manual of Surgical Treatment* and he also edited a *System of Operative Surgery*. He had been elected a Fellow of King's College in 1909, and on his retirement in 1923 he was appointed consulting surgeon and emeritus lecturer in clinical surgery. On retiring from practice he went to live at Rolleston, Burton-on-Trent, where he became consulting surgeon to the Burton-on-Trent General Infirmary.

A. M. WEBBER, M.S., F.R.C.S.

Mr. Alexander Moxon Webber, for a number of years one of Nottingham's most eminent surgeons, died at his home in Sandown, Isle of Wight, on Oct. 26. He retired and went to live there in December, 1945, but before then he had been in failing health for some time. He was born in South Africa, and he came to England and received his medical education at Guy's Hospital. He graduated M.B., B.S. in 1903, and two years later he took the London M.S., and in 1906 the F.R.C.S. The following year he settled in Nottingham in partnership with Mr. Chicken, who was one of the surgeons at the General Hospital. At Guy's Hospital Mr. Webber had held the post of house-surgeon and obstetric resident. He was also clinical assistant at Great Ormond Street for a short period.

After settling in Nottingham he rapidly became well known and was appointed in succession assistant surgeon to the Children's Hospital, to the Nottingham General Hospital, and to the Women's Hospital, and later on he rose to the full staff. In the first world war he served abroad with the R.A.M.C., principally in East Africa, with the rank of major. Mr. Webber was always an active member of the British Medical Association. He was secretary of the Nottingham Division from 1922 to 1925, and chairman in 1931–2. He had been a member of the Council, and had served on a number of central committees. He was also a representative at the A.R.M. for ten successive years from 1919–28.

R. G. H. writes: My closest association with Mr. Webber was, of course, when he acted as secretary for the Annual Meeting in Nottingham and I was president. Nobody could have had a better secretary. He was a born administrator, and in addition to that he never quarrelled with anyone, so that at the Nottingham meeting we never had any dispute before or during the meeting and everything went smoothly and well. All this was due to Mr. Webber, and he was most ably supported by a very clever, capable, and devoted wife, who survives him. As a medical colleague he was always understanding and very human. He had a most retiring nature and never pushed himself forward. I never heard him say an unkind thing about anyone, and I have never known a surgeon who was better liked by his patients. In Nottingham he is greatly missed and will be long remembered.

JOHN CHARLES, M.D.

Dr. John Charles, who died suddenly on Oct. 15 at the age of 83, was born in Elgin. In 1888 he graduated M.B., C.M. at the University of Glasgow, and proceeded to the doctorate in 1895, with commendation. After qualifying, he took an assistantship in Sunderland before starting in general practice at what was then just a small colliery village at Stanley, in Durham, and there he lived and worked for the remaining fifty-two years of his life. During that time he saw the place grow from a collection of houses round the colliery until it became one of the twelve largest urban areas in the county. For years Dr. Charles's partner was his brother-in-law, Dr. Dewar. It was a typical colliery practice, but of rather a new type. For many years the medical work in the colliery districts in Durham and Northumberland had been carried on largely by unqualified assistants who lived in the hamlets round about the collieries while the principal, who might employ several of these assistants, would reside in the older, well-established villages or small townships. But just about the time that Charles started in practice one of the Medical Acts had brought that system to an end, and the opportunity was provided for a new and better arrangement. The miners were not slow to appreciate the advantages of the change, and from the outset Charles set out to give them a first-rate service. An early event after his arrival in Stanley was a dispute between the colliery doctors and the miners regarding the amount of the fortnightly subscription to the medical fund. The contribution, which was deducted at the colliery offices from the men's pay, was 6d., which, as a result of prolonged and tedious negotiations, was eventually raised to 9d. The dispute affected considerable areas of the northern coalfield.

The cause of the colliery doctors was loyally championed by Rutherford Morison, who was then rapidly becoming the leading surgeon in the North and with whom Charles was closely associated as secretary of the Colliery Practitioners' Association. A great deal of work was involved and many meetings were arranged and attended up and down both counties. At that time there was no easy transport by motor-car, and local train services were poor, so that many of the journeys had to be made by bicycle, which was no easy task in the hilly parts of County Durham. Morison and Charles formed a good combination, and their work was appreciated.

Dr. Charles was devoted to his professional work and carried out his duties as a colliery doctor conscientiously and systematically. He was one of those who kept in touch with the work at the old Infirmary in Newcastle and used often to come in to see his patients. Over the years Charles acquired an intimate insight into the miner's mind based on a close knowledge of his way of life with its difficulties and dangers. Strikes, lock-outs, and political upheavals deeply affected the colliery doctor, and the calm, steadying effect of men like Charles was

then invaluable. Whenever problems had to be adjusted in the relationship of doctor and miner he was called in as consultant, adviser, and mediator. One particular hazard of the miner's life was experienced in February, 1909, when an explosion at the West Stanley Colliery resulted in the loss of the lives of 168 men and boys. Charles took part in the grim work of rescue, descending the pit at an early stage after the explosion and remaining underground as long as there was a glimmer of hope that any of the victims might be found alive.

Early in his career Dr. Charles began an association with the Consett Division of the B.M.A., for which he acted as honorary secretary for a quarter of a century. All the honours of the Division and of the North of England Branch eventually came to him, and he was President of the Branch in 1923–4.

Although Charles was mild and not in the least aggressive, he was a man of sterling courage and was always prepared to back up his own opinion when he felt he was in the right. When the National Health Insurance scheme was first under discussion there was a great deal of opposition in the North, but at a large and obviously hostile meeting Charles had the courage to get up and make a speech in support of what he conceived were some valuable features in what was then a novel scheme. About 1904 he began to interest himself in local government and served on the district council for some nine years. He was also for some years chairman of the local municipal association. In 1923 he was made a justice of the peace, and he took a great interest in his magisterial duties until well on in his seventies. He was also one of the originators and, for the long period of 44 years, the founder-chairman of the local building society.

He married the sister of his future partner in 1892, and his widow survives him. His family consists of two sons and a daughter. The sons both followed his profession, but the younger predeceased him in 1937; the elder took up a public health career, and is now in the Ministry of Health. Until a few months ago Dr. Charles enjoyed wonderful health and was able to carry on many of his activities. His death came suddenly and unexpectedly, and was a severe blow to the neighbourhood, where he was so well known, respected, and beloved.—G. G. T.

Dr. HERBERT HENRY WARREN died on Oct. 11 at the age of 67. A son of W. H. Warren, professor of engineering in the University of Sydney, he graduated at Birmingham in 1907, and after a period as resident medical assistant at Jaffray Hospital he settled in Portsmouth in 1909 in partnership with the late Dr. Marwood. During the 1914–18 war he served in the R.A.M.C. with the rank of major and was mentioned in dispatches. He had a lifelong connexion with the St. John Ambulance Association, and became county surgeon in 1942, being made an officer of the Order of St. John of Jerusalem only a few months ago. He had been secretary of the Portsmouth Division of the British Medical Association from 1925–7 and chairman from 1929–30. He was president of the Southern Branch in 1944–5, and on seven occasions had been a representative at annual meetings.

Dr. A. Brownlee writes: By the death of Mr. J. W. GEARY GRANT there has passed away one of the ablest surgeons associated with Cardiff. Geary, as we affectionately knew him, retired from active practice about a year ago to live in Weymouth. His health was failing when he left Cardiff. He began to get heart attacks, and it was obvious to his intimate friends that he could not go on for very long. The end came suddenly on Oct. 23, with symptoms of cerebral haemorrhage and cardiac failure. On his professional attainments I do not intend to dwell: these speak for themselves. He came to Cardiff Royal Infirmary in 1900 as resident medical officer. After a year's residency he went into general practice in Llanwrtyd Wells for some years. Returning to Cardiff about 1909, he became assistant surgeon and later surgeon to the infirmary. He held many other appointments, including those of surgeon to Porth Hospital, Glan Ely Hospital, and several others. But it was of his private life that I wish to speak. Geary Grant was one of the straightest men I ever knew and was utterly incapable of performing a mean action of any kind. He will be sadly missed by his widow and daughters, to whom the deepest sympathy is extended in their loss.

Medico-Legal

CERTAINTY IN SURVIVORSHIP

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

Since the new property legislation of 1925, where two or more persons die in circumstances which make it uncertain which of them survived the other or others, the deaths are presumed to have taken place in order of seniority and the court supposes, for the purpose of distributing the estate, that the younger survived the elder. The working of the rule was illustrated by the well-known cases in which a number of persons died in the same bomb explosion, and the House of Lords delivered a set of lengthy, highly involved, and conflicting judgments on whether two deaths can at law ever be simultaneous.[1] A recent case concerning not air-raid deaths but a double gas-poisoning dealt with the evidence required to prove certainty or uncertainty.[2]

An old couple were found by a neighbour dead in their kitchen, with the tap of the gas-oven slightly turned on and a cooked joint in the oven. The medical evidence was conflicting. Dr. John Taylor said that the blood of the husband, aged 83, was 57% saturated. He was healthy except for some cerebral atheroma. The wife, aged 75, was healthy except for granular kidneys, and her blood was 47% saturated. The witness therefore concluded that she had died first. The concentration of carbon monoxide in the blood tended to rise with the length of exposure and after death no more gas was absorbed; therefore, when two people were exposed to the same concentration, it was reasonable to suppose that the person with the higher concentration died later than the other. Dr. R. D. Teare said that errors might arise before a sample of blood reached the laboratory; the gas in the blood escaped, and so the analysis revealed a lower figure than it would have given at the time of death. The error varied with the amount of air left in the bottle, the degree of shaking of the bottle in transport, and the time intervals between death, the taking of the specimen, and the analysis. The concentration generally accepted as lethal was between 60 and 80%—much higher than that in either sample. He therefore said that Dr. Taylor's figures could not represent the concentrations in the bodies of the deceased persons at the time of death, that gas had been lost from both specimens, and that the figures were no guide to which of the two had died first.

Sir Bernard Spilsbury confirmed that 57% was a low saturation in a fatal case, and said he was very doubtful whether 42% saturation could cause death. The low concentrations raised a suspicion of a loss of gas from the samples before they were tested. This, he said, occurred readily unless the samples were collected with great care. Like Dr. Teare, he did not regard the tests as a reliable indication of which of the two died first; nor did he find any medical facts to indicate which would be likely to die before the other, except the greater age of the man. Dr. Taylor, in reply, testified that some gas might well have been lost during the two days between the taking and the testing of the samples. In any event, however, it was reasonable to suppose that both samples were affected to the same extent. The considerable difference between the two could not have been accounted for by anything that had happened after the death. He added that once the brain cells had been sufficiently damaged by the effect of the gas, death could occur even after all traces of gas had been removed from the blood. The degree of damage would depend on the period of exposure as well as on the concentration. For this reason the percentages of saturation were relatively significant and, apart from any other circumstances, indicated a strong probability that the wife died first.

The learned judge, Mr. Justice Jenkins, quoted some of the opinions of the Law Lords on the nature of "uncertainty" within the meaning of the section. Lord Simon had said that it was an uncertainty not removed by evidence leading to a definite and warranted conclusion. Lord Macmillan had said it denoted a reasonable element of doubt. The judge thought

[1] *Hickman* v. *Peacey*, 1945 A.C. 304.
[2] Re *Bate*, 1947 2 All E.R. 418.

that, to come to a definite conclusion that the husband survived his wife, it was not enough for him merely to find that that was the more reasonable conclusion. He must come to a conclusion of fact on grounds that so far outweighed any grounds for a contrary conclusion that this could be ignored. He could not do so on the present evidence with its conflict of medical opinion. As there was no reliable ground on which he could find that either died before the other, the presumption must prevail that the younger, the wife, survived the elder, her husband.

Medical Notes in Parliament

Medical Organization in the Services

On Nov. 5 Dr. SEGAL asked when the Minister of Defence would institute a unified medical organization for the three Defence Services, in order to economize in manpower and medical supplies. Mr. ALEXANDER replied that, as he had said on July 9, it had not yet been established that the institution of a unified medical service was to be preferred to the maximum degree of co-ordination between the existing Services.

Sir HENRY MORRIS-JONES said officers of the R.A.F. and the Army wrote to the medical journals week by week to say they had nothing to do. (Under the heading "Working Day in the Services," letters have appeared in the *Supplement* of Oct. 18, p. 93; Nov. 1, p. 101; and Nov. 8, p. 113.)

Mr. ALEXANDER said he had seen such comments, but they did not agree with the advice given by the senior professional advisers. He added that steps were already being taken to co-ordinate the specialist services of the three Defence Forces.

Release of Medical Officers.—Col. STODDARD-SCOTT asked on Nov. 4 whether in view of the Government's decision to reduce the size of the Services Mr. Bevan would reduce the age limit of medical and graded specialists now liable to be conscripted up to the age of 40, in view of the shortage of specialists in civil life. He further asked Mr. Bevan if he would accelerate the release of doctors and dentists now serving with the Forces; and if he would assure the House that there was a proportionate reduction in the number of those now conscripted in view of the shortage of doctors and dentists in civilian practice. Mr. JOHN EDWARDS replied that Mr. Bevan was advised on the recruitment and release of doctors by the Medical Priority Committee under the Chairmanship of Dr. Haden Guest. He awaited its advice on the effect of the recently announced reductions in the size of the Forces.

Venereal Disease.—Dr. SEGAL on Nov. 4 asked for figures for the incidence of venereal disease among Army personnel in the United Kingdom and the various theatres overseas for each of the first three quarters of 1947. Mr. SHINWELL, in reply, circulated this table:

JANUARY–JUNE, 1947
(*Quarterly Rates per* 1,000 *Strength*)

	1st Quarter	2nd Quarter
United Kingdom	5·2	5·5
Germany	36·4	34·8
Italy	23·7	34·1
Austria	36·8	34·7
Middle East	6·7	4·7
Far East	32·6	27·7
Japan	61·2	46·8

Figures for the third quarter are not yet available. As a result of administrative changes, Middle East includes Malta and East Africa as from April 1, 1947. The sharp fall in the second quarter is at least partly attributable to a reduction in the number of troops in Greece, where the rate of venereal disease was high. The number of troops in Japan is small and sharp fluctuations are therefore to be expected.

Calories.—The most recent dietetic survey results (July, 1947) show an average intake of 2,287 calories for working class households from food eaten at home. The figure for July, 1946, was 2,282 calories.

Calories Again.—Dr. EDITH SUMMERSKILL said on Nov. 3 that the estimated national average calorie intake from all foods, rationed and unrationed, was 2,870 per head per day. Consumption by individuals within this total differed widely. To calculate the average daily calorie intake of rationed and points goods, and hence that of unrationed foods, would involve lengthy calculations which she did not think would be justified, since the result would have no relation to individual cases.

Universities and Colleges

UNIVERSITY OF OXFORD

In a Congregation held on Oct. 16 the following degrees were conferred:

B.M.—W. L. Gordon, G. E. Mann, N. C. Hughes Jones, O. M. Wrong, Mrs. Mercy I. Heatley, D. C. Bernstein (in absence).

UNIVERSITY OF LONDON

The following awards have been made to students of the course for the Academic Diploma in Public Health at the London School of Hygiene and Tropical Medicine during the session 1946–7: *Chadwick Prize*, Dr. J. H. F. Brotherston; *Association of Industrial Medical Officers' Prize*, Dr. J. N. Morris; *Hecht Prize*, Dr. M. E. R. Balfour and Dr. T. McL. Galloway.

UNIVERSITY OF EDINBURGH

At a Graduation Ceremonial on Oct. 25 the degree of Ph.D. (in the Faculty of Medicine) was conferred on Y. Y. Akrawi, M.B., Ch.B., and the degree of B.Sc. in Pathology (in the Department of Pure Science) on G. M. Wilson, M.B., Ch.B. (with first-class honours). G. A. C. Summers, M.B., Ch.B., B.Sc., has been admitted to second-class honours in pathology, after graduation.

The following diplomas were granted:

D.P.H.—*K. A. Brahmabhatt, *V. D. R. Martin, *J. A. Miller.
DIPLOMA IN MEDICAL RADIOLOGY.—*T. A. B. Mason.
* *In absentia.*

ROYAL COLLEGE OF SURGEONS OF ENGLAND

A series of lectures on anatomy, applied physiology, and pathology will be delivered at the College (Lincoln's Inn Fields, London, W.C.) on Mondays to Fridays from Nov. 24 to Dec. 19, both dates inclusive, at 3.45 p.m. and 5 p.m. each day. The fee for the course is £10 10s.; but Fellows and Members of the College and Licentiates in Dental Surgery will be admitted for £8 8s. Admission cards may be obtained from the secretary of the Postgraduate Education Committee of the College.

A series of lectures in ophthalmology will be delivered daily at the College from Monday, Dec. 29, to Tuesday, January 13, 1948, at 5 p.m. (both dates inclusive, but Saturdays and Sundays excepted). The fee for the whole course is £5 5s. (single lecture, 10s.), but Fellows and Members of the College and Licentiates in Dental Surgery will be admitted for £3 3s. (single lecture, 7s. 6d.). Applications should be sent to the Secretary of the Postgraduate Education Committee of the College.

The Council of the College invites applications by Dec. 31 for the Sir William H. Collins Professorship of Human and Comparative Pathology, at a salary of not less than £2,000 per annum. Particulars and terms of appointment may be obtained from the Secretary of the College.

The Museum of the College in Lincoln's Inn Fields, London, W.C., is again available for the use of medical practitioners, medical students, etc. It is open daily from 10 a.m. to 5 p.m. (1 p.m. on Saturdays), but visitors are warned that on account of shortage of accommodation the Anatomy Museum is sometimes in use during parts of the afternoon for lectures or meetings. Revised catalogues are in course of preparation and in the meanwhile specimens are marked with descriptive labels.

The collections are still much depleted by enemy action, but the following series are sufficiently complete for exhibition: *Anatomy.*—On the ground floor in Room I specimens illustrating the nervous system and integument are arranged and labelled. In the galleries of this room specimens illustrating other systems are available for study but are not yet permanently arranged or labelled. *Pathology.*—Diseases of the skeleton; diseases of the nervous system; diseases of the alimentary system; teratology; a special group of selected Hunterian specimens. Other series are still so fragmentary that they are of little value to students.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

At a quarterly comitia of the College, held on Oct. 30, with the President, Lord Moran, in the chair, Prof. F. J. Nattrass, Dr. W. Russell Brain, and Dr. R. D. Curran were elected Councillors.

The following were elected representatives of the College: Sir Adolphe Abrahams on the committee of management of the Conjoint Board; Dr. F. S. Langmead on the Central Midwives Board; the President, Sir Leonard Parsons, Dr. H. E. A. Boldero, Dr. W. G. Barnard, and Sir Allen Daley on the standing joint committee of the three Royal Colleges; Dr. C. M. Hinds Howell, Dr. M. E. Shaw, Dr. J. B. Harman, and Dr. J. C. Hawksley on the Committee

of Reference; Dr. C. M. Hinds Howell and Dr. J. B. Harman on the Central Medical War Committee; Sir Arthur MacNalty on the Aliens Committee of the Central Medical War Committee (in succession to Sir Robert Hutchison who had resigned); and Dr. J. Hay (re-elected) on the court of governors of the University of Liverpool.

Dr. Marc Daniels was appointed Milroy Lecturer for 1949, his subject being "Tuberculosis in Post-war Europe."

The President announced that the Gilbert Blane Gold Medal for 1947 had been awarded to Surgeon Commander G. H. G. Southwell-Sander, R.N., and the Jenks Memorial Scholarship to M. B. Watts, late of Epsom College.

Membership

The following candidates, having satisfied the Censors' Board, were elected Members of the College:

E. B. Adams, M.B.; G. F. Adams, M.D.; H. St. C. C. Addis, M.B.; K. D. Allanby, M.B.; H. Angelman, M.B.; R. C. Angove, M.B.; J. W. Beattie, M.D.; G. A. Bedwell, M.B.; R. B. Blacket, M.B.; P. J. A. Blaney, M.B.; J. J. Bourke, M.B.; W. H. Bradley, D.M.; J. F. Buchan, M.B.; G. MacG. Bull, M.D.; W. E. Church, M.B.; J. A. K. Cuningham, M.B.; G. R. Davies, M.B.; E. G. Donovan, M.B.; L. Eales, M.B.; V. Edmunds, M.B.; C. H. Edwards, L.R.C.P.; C. G. Fagg, M.B.; Elizabeth de C. Falle, M.B.; H. G. Farquhar, B.M.; E. Fletcher, M.D.; J. O. Forfar, M.B.; T. G. Fox, M.B.; P. Frankel, M.D.; E. S. Frazer, M.B.; A. Freedman, M.B.; O. Garrod, M.B.; J. W. Gerrard, B.M.; F. S. Gorrill, M.D.; H. J. Hambling, M.B.; H. C. Hamilton, M.B.; G. F. Harrison M.B., Lieut.-Col., R.A.M.C.; M. F. Hart, M.B.; M. A. Hassanein, M.B.; Hung-chiu Ho, M.B.; Q. J. G. Hobson, B.M.; A. Hollman M.B.; S. Hunter, M.B.; J. Jacobs, M.D.; D. Jamieson, M.B.; J. M. Jefferson, B.M.; P. B. Kunkler, M.B.; D. N. Lawson, M.B.; D. N. Leeming, L.R.C.P.; J. Lister, M.B., K. R. Llewellin, M.B.; P. M. Luhar, M.B.; B. McConkey, B.M.; J. P. McGladdery, M.D.; I. C. K. Mackenzie, M.B.; J. G. Millichap, M.B.; G. E. Milne, B.M.; J. N. Milnes, M.B.; C. H. Naik, M.B.; Catherine A. Neill, M.B.; S. G. Nelson, M.B.; M. H. Oelbaum, M.B.; J. F. Pantridge, M.D.; J. C. S. Paterson, M.B.; Florence R. Pillman, M.B.; J. B. Randell, M.B.; P. C. Reynell, B.M.; J. A. Robertson, M.B.; C. A. Rumball, L.R.C.P.; V. E. Sampson, M.B.; C. G. R. Sell, M.B.; M. L. Sharma, M.B.; J. R. Simpson, M.B.; J. F. P. Skrimshire, M.B.; J. S. Staffurth, M.B.; S. W. Stanbury, M.B.; I. McD. G. Stewart, M.B.; P. E. Sundt, L.R.C.P.; J. Sutcliffe, M.B.; P. H. Sutton, M.D.; R. D. Sweet, M.B.; B. FitzA. Swynnerton, B.M.; P. E. D. S. Wilkinson, M.B.; I. P. Williams, M.B.; J. M. G. Wilson, M.B.; R. B. Wilson, M.B.; Joan D. Wrigley, M.B.; J. B. Wyon, M.B.; Judith C. M. Yuill, M.B.

Licences

Licences to practise were conferred upon 129 candidates (including 30 women) who have passed the final examination in Medicine, Surgery, and Midwifery of the Conjoint Board and who have complied with the by-laws of the College:

K. J. Adams, B. P. Appleby, D. E. Argent, E. M. P. Ball, T. W. Barnes, A. F. Barnett, D. W. G. Bartlett, R. W. A. C. Barton, Barbara Baxter, Kathleen M. Bech, A. Beck, Audrey Beder, Evelyn M. P. Bedwell, J. Bendas, Nancy L. C. Berry, J. B. Binks, T. D. Brentnall, D. J. Brewer, Margaret L. M. Bridges, G. B. Brown, G. B. Burchell, Evangeline Burgess, A. R. P. Calder, Emily M. Collingridge, S. Compton, E. P. Cooke, M. H. D. Cooper, D. J. Cowan, I. W. Crown, D. M. Curtis, Phyllis Dagnall, E. T. Dakin, D. W. Davies, A. M. Dickinson, A. E. Dossetor, Evelyn S. Elliott, J. Elstub, H. R. Erskine, E. J. Fairlie, G. E. Faulkner, R. A. W. Feakes, Rosalind Fellowes, Margaret M. F. Fitzpatrick, Mary E. Forrester, R. French, P. S. Gardner, F. P. A. Garton, J. Gay, M. Ghousuddin, N. M. Gibbs, Elizabeth M. Gorst, D. B. Goss, G. Hacking, Jean Hansell, J. L. Hardman, M. A. Heasman, A. G. Henderson, Mary M. Herley, Miriam Hirtzel, Eleanor M. Hoole, J. B. Howard, Jean A. Infield, L. J. Ison, W. B. James, A. Ll. Jeanes, J. G. Jeffs, M. S. Johnson, C. Jones-Morgan, Ruth V. Kemp, D. W. Kennard, J. V. Kilby, Alwin C. B. Latham, W. C. Lathbury, R. H. N. Long, D. Lonsdale, Mary A. J Lourie, K. N. H. Low, W. E. MacBean, D. Y. Mackenzie, D. L. M. McNeill, R. I. Maitland, D. N. Mitchell, D. C. Morley, Sybil M. Murray, Hannah Mushin, Setty S. Narayana, J. E. Noble, H. R. Odlum, E. G. Old, Barbara Oldham, J. H. H. Oliver, R. L. Osmont, R. D Pearce, Eileen M. Pearson, L. Phillips, B. G. Pickles, A. Pilling, J. S. Porterfield, F. Rassim, W. H. Rees, M. C. T. Reilly, Doreen M. Reside, P. W. H. Robinson, D. J. H. Rogers, J. R. Scholey, B. K. Scott, Margot Shiner, Elisabeth Shoenberg, R. Sloman, R. I. L. Smallwood, C. W. Smith, P. H. A. Sneath, D. J. R. Snow, W. Spector, H. B. Stafford-Kemp, D. P. P. Thomas, B. Towers, E. J. Trimmer, D. K. Tucker, Betty M. L. Underhill, J. H. B. Urmston, C. W. J. Ussher, J. K. Walker, A. Ll. Warlow, B. M. Watney, F. E. Weale, J. S. Weiner, A. W. Weller, H. D. Yauner.

Diplomas

The following diplomas were conferred jointly with the Royal College of Surgeons of England:

DIPLOMA IN CHILD HEALTH.—Isabella M. Almond, L. Apter, M. W. Arthurton, N. C. Begg, Marjorie Bell, P. C. Bhattacharjee, Evelyn L. Billings, Ruth Blackwood, M. P. Bourke, Phyllis E. M. Bowen, Rosemary R. M. Bradmore, Lilian M. Burbidge, Angela E. D. Burns, Mary W. Coxon, D. G. Crawshaw, Agnes A. Crone, D. E. Cullington, Enid Curran, J. E. A. David, Gwendoline E. Davison, G. K. Dhariwal, E. M. Dimock, D. Eglin, H. H. A. Elder, Norah C. Elphinstone, B. Epstein, H. C. Falcke, O. D. Fisher, S. Ghosh, Mary E. Goodson, R. R. Gordon, Muriel D. Graham, J. Griffith, D. Hilson, Helen C. Humphreys, S. Hunter, A. F. Huston, Margaret Ingham, H. Isenberg, I. P. Jaffe, R. T. Jenkins, S. T. H. Jenkins, G. G. Jones, Megan P. Jones, R. S. Jones, Amy K. Jungalwalla, S. E. Keidan, J. J. Kempton, I. Kessel, Beryl E. Lewis, Joyce R. Lewis, I. M. Librach, D. Macaulay, Grace E. McClafferty, W. E. MacLean, R. F. Maggs, Margaret D. C. Martin, J. D. H. Matthews, W. R. May, Kate Menashe, J. A. W. Miller, W. J. Moffett, N. G. Mojumdar, I. Morris, Stella M. Murray, T. N. Nauth-Misir, Sheila M. M. Niall, L. Pannall, Diana G. Paradise, C. V. Patel, I. E. Phelps, Rosa M. Piggot, J. N. A. Pritchard, H. S. Provis, Margaret Readman, P. A. H. Rivett, Cecilia M. Robinson, Sheenah J. McK. Russell, E. Sanders, M. J. A. Sandrasagra, S. S. Schmulian, Elizabeth M. Sefton, J. Shein, S. C. Sheth, Rosemary J. S. Sichel, J. C. Simson, Margaret Slater, Evelyn A. Souter, M. Stein, J. MacF Stuart, J. H Tan, Sheila R. Tangye, W. F. J. M. Thom, P. A. Thorn, R. B. Tulk-Hart, G. S. Udall, Elizabeth G. Vaughan, C. K. J. Vautier, Glenys J. Wade, B. D. R. Wilson, Lydia A. Wilson, E. R. Winton, B. Wolman, L. G. Woods, Marjorie Wright, T. Wright.

DIPLOMA IN OPHTHALMIC MEDICINE AND SURGERY.—E. Heffernan, J. McClemont, and those whose names were printed in the *Journal* of Oct. 11 (p. 593).

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.—The names of the successful candidates for this diploma were published in the *Journal* of Aug. 23 (p. 313) and Oct. 11 (p. 593).

DIPLOMA IN MEDICAL RADIO-DIAGNOSIS.—I. Ap Thomas, E. Batley, J. L. Boldero, J. S. Campbell, P. S. G. Campbell, A. F. Crick, C. G. Edwards, J. B. Fawcitt, D. Hector-Jones, A. K. Lamballe, M. W. H. Mackay, Elsie L. Mettam, W. R. Parker, J. N. Pattinson, E. N. Pearlman, S. P. Rawson, D. Sutton, B. W. Thomas, J. M. W. Wells, C. G. Whiteside.

DIPLOMA IN MEDICAL RADIOTHERAPY.—K. W. Beetham, D. G. Bratherton, E. C. Easson, J. M. W. Gibson, H. Holden, K. S. Khambata, N. S. Lockyer, J. Ll. E. Millen, T. K. Morgan, B. A. Stoll.

DIPLOMA IN PUBLIC HEALTH.—A. MacFarlane.

DIPLOMA IN LARYNGOLOGY AND OTOLOGY.—B. Cohen.

DIPLOMA IN PHYSICAL MEDICINE.—A. C. Boyle, M. C. Woodhouse, A. Zinovieff.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

Prof. John Morley, F.R.C.S., will deliver the Dr. John Burns Lecture in the Hall of the Faculty (242, St. Vincent Street, Glasgow) on Wednesday, Nov. 19, at 5 p.m. His subject is "Abdominal Pain as an Aid to Diagnosis in Abdominal Disease."

At the annual meeting of the Faculty the following officers were elected for the ensuing year: *President*, Dr. Geoffrey B. Fleming; *Visitor*, Dr. William R. Snodgrass; *Honorary Treasurer*, Mr. Walter W. Galbraith; *Honorary Librarian*, Dr. Archibald L. Goodall; *Representative on General Medical Council*, Mr. Andrew Allison.

EPIDEMIOLOGICAL NOTES

Poliomyelitis

The decline in notifications continued, and in the week ended Nov. 1 there were 221 (251) cases of poliomyelitis and 22 (29) cases of polio-encephalitis. It now seems probable that incidence will remain at a much higher level than is usual in winter for the remainder of the year, as the decline in prevalence is considerably less steep than was the rise.

In the week ended Oct. 25 no large variation from the preceding week was recorded in individual areas; the largest decline was 11 in Lancashire. The largest returns were those of the county boroughs of Birmingham 9, Salford 7, Manchester 4, Northampton 4, and Croydon 4. Four cases of polio-encephalitis were notified from Gloucestershire, Lydney R.D.

Cholera in Egypt

The cholera epidemic which began at El Kurein, a village in Sharkyia Province, on Sept. 22 appears to have passed its peak. There are now fewer than 150 deaths and 300 new cases reported daily, as against 400 deaths and 800 cases a few weeks ago.

The present epidemic and the steps taken to control it are reviewed in the *Chronicle of the World Health Organization* (October, p. 141). Energetic measures taken by the Egyptian Government, summarized under 28 headings, and the co-operation of other governments confined the epidemic during its first weeks to a relatively small area in the Nile Delta. Not till Oct. 16 and 17 were cases reported from Kena and Beni Suef (Upper Egypt). The total cases and deaths notified provisionally were:

Week Ending	*Cases*	*Deaths*
Sept. 29	523	156
Oct. 6	889	378
Oct. 13	1,303	551
Oct. 20	4,566	2,075
	7,281	3,160

The meeting of the Expert Committee on Quarantine of W.H.O. was held during Oct. 13–16 instead of on Nov. 24 so that problems arising from the cholera epidemic might be discussed. The question of an international certificate to avoid revaccination of a traveller and quarantine restrictions were discussed and a formula agreed upon. The committee were opposed to the issue for persons travelling on urgent business of the wartime "Provisional International Certificate," since this might break down the international system of quarantine protection. Quarantine procedure and the health regulations governing air travel were described by R. H. Barrett in our issue of Nov. 8 (p. 741). A discussion on the epidemiology of cholera is reported elsewhere in this issue (p. 785).

So far 1,400,000 doses of cholera vaccine have been sent from this country to Egypt, most of it manufactured in September and October. The War Office supplied 25,000 ml. to the Egyptian Air Force; 220,000 ml. were sent to G.H.Q., Middle East, and to the Embassy in Cairo for inoculating members of the Forces and British civilians. The balance

was supplied by British firms to the order of the Egyptian Government.

There have been no cases of cholera among British troops in Egypt, but there have been two cases among native African troops under British command.

A report that a case of cholera has been diagnosed at Dubai Air Station on the Persian Gulf has not yet been confirmed.

Typhoid at Harrow

On Sept. 10 one child fell ill in a Harrow nursery which houses 25 children, all under 5, and all the sons and daughters of European refugees. The nursery is a building not properly adapted for its purpose. On Sept. 20 the child was admitted to hospital, and on Sept. 23 the diagnosis of typhoid fever was confirmed bacteriologically. All admissions to the nursery were stopped, and 13 children and two members of the staff were admitted to hospital for investigation. There were some cases of gastro-enteritis, and altogether 4 cases of typhoid. The source of the infection is believed to have been the mother of a child who was not affected. The mother works at a convalescent home outside Harrow, and Vi-phage type F1 bacilli were found in her case, as in the 4 patients, though in one child only the sixth examination of the stools proved positive.

Influenza Control in U.S. Army

Vaccination of all U.S. Army personnel began last month, and those entering the service before April, 1948, will receive influenza vaccine along with their initial immunizations. Precautions will be taken to avoid administering influenza vaccine to men with a history of egg allergy. Suspected outbreaks of the disease occurring in a military installation or command are to be reported to the Surgeon General. Laboratory tests will be made in the field on early cases. In addition to the A and B viruses the vaccine contains an A-variant cultured from the distinctive type of influenza that occurred at Fort Monmouth, New Jersey, last year. It is possible that other new strains may be demonstrated this year.

Discussion of Table

In *England and Wales* an increase was reported in the incidence of dysentery 294, measles 184, scarlet fever 100, and diphtheria 36. There were decreases in the number of notifications of acute pneumonia 49, poliomyelitis 25, paratyphoid fever 13, and cerebrospinal fever 10.

The large rise in the notifications of dysentery was due to an outbreak involving 260 persons in Berkshire, Wallingford R.D. The other large returns for dysentery were Surrey 15, Lancashire 16 (Liverpool C.B. 13), and Yorkshire West Riding 12 (Aireborough U.D. 8).

The only large rises in the incidence of measles were those of Northamptonshire 42, and Yorkshire West Riding 36. Little change occurred in the local incidence of scarlet fever. The only fluctuation of any size was an increase of 44 in Lancashire. The returns for diphtheria were the largest for 30 weeks: the largest increases during the week were Durham 14, and Middlesex 11. Notifications of whooping-cough remained practically unchanged, except for a decrease of 33 in Essex.

In *Scotland* decreases were recorded in the incidence of dysentery 17, diphtheria 15, and cerebrospinal fever 5, while increases were reported for acute primary pneumonia 54, scarlet fever 41, whooping-cough 26, and measles 21. Five further cases of dysentery were notified from the outbreak in Aberdeen county, where 22 cases were reported in the preceding week. The largest return for dysentery during the week was Edinburgh 13. The fall in the incidence of diphtheria was in the Western area. The increase in cases of scarlet fever and acute primary pneumonia was mainly due to the experience of the city of Glasgow. An outbreak of whooping-cough in the city of Dundee accounted for the increase in this disease.

In *Eire* an increase was recorded in the notifications of measles 21 and typhoid fever 14, and a decrease for diarrhoea and enteritis 17. A small rise in the notifications of measles was general throughout the country districts. Of the 17 cases of typhoid fever 6 were notified in Monaghan, Castelblayney R.D.

In *Northern Ireland* the only variation of any size in the returns of infectious diseases was a decrease of 9 for measles.

Week Ending November 1

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,529, whooping-cough 1,037, diphtheria 178, measles 2,052, acute pneumonia 502, cerebrospinal fever 39, acute poliomyelitis 221, acute polioencephalitis 22, dysentery 126, paratyphoid 15, and typhoid 4.

No. 43

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Oct. 25.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1947 (a)	(b)	(c)	(d)	(e)	1946 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	34	1	19	—	1	28	1	18	1	—
Deaths		—	1				1	—		
Diphtheria	238	24	49	13	4	314	16	92	36	12
Deaths	3	1	—	—	—	3	—	1	2	—
Dysentery	340	3	30	—	1	59	18	32	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	—	—	2	—	—	1	—	—	—	—
Deaths		—					—			
Erysipelas			32	12	3			32	1	2
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				84					52	
Deaths	69	7	13	12	4	36	4	12	3	2
Measles*	1,981	41	105	213	2	2,884	105	162	69	7
Deaths	—	—	—	—	—	2	—	1	—	—
Ophthalmia neonatorum	53	7	13	1	—	68	5	20	2	—
Deaths										
Paratyphoid fever	3	—	1 (B)	—	—	89	1	—	—	1 (B)
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	482	33	5	2	2	436	32	6	1	3
Deaths (from influenza)†	12	2	1	—	—	13	1	2	—	1
Pneumonia, primary			238	21				190	17	
Deaths		30		7	6		22			13
Polio-encephalitis, acute	29	4				2	—			
Deaths		—					—			
Poliomyelitis, acute	251	23	54	6	7	31	3	5	8	1
Deaths		2					—			
Puerperal fever		2	16		—		4	19		—
Deaths										
Puerperal pyrexia‡	125	12	3	2	1	160	11	10	2	2
Deaths		1					1			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,452	132	308	73	58	1,209	103	262	43	40
Deaths	—	—	—	1	—	—	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	4	—	2	17	—	9	1	2	2	12
Deaths	1	—	—	1	—	1	1	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	1,003	78	54	30	1	1,499	94	143	37	40
Deaths	1	1	—	3	—	4	—	—	—	—
Deaths (0–1 year)	354	39	61	35	15	391	45	59	19	18
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	4,364	729	578	177	93	4,157	604	591	168	123
Annual death rate (per 1,000 persons living)			12·0	11·2				13·0		
Live births	7,765	1290	1018	429	237	8,883	1403	1097	324	240
Annual rate per 1,000 persons living			20·5	27·1				22·1		
Stillbirths	254	32	24			265	26	26		
Rate per 1,000 total births (including stillborn)			23					23		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

Medical News

National Insurance for the Self-employed

Speaking at the London Rotary Club on Nov. 5, Mr. James Griffiths, Minister of National Insurance, said that in the great majority of cases self-employed men would be coming into national insurance for the first time. The scheme would come into force next July, and, unlike the present unemployment, health, and pensions schemes, would cover everyone, whether working for an employer or not. There would be three classes: (1) those employed under a contract of service—no matter how high their salaries; (2) those gainfully occupied on their own account—the self-employed; and (3) those who are not gainfully occupied in any way. For each class there would be different contributions and benefits. The self-employed included street hawkers, small shop keepers, some independent artisans, many of the professional classes, the heads of businesses, and partners in businesses.

Everyone who was not already insured under either the health, pensions, or unemployment schemes would have to register early next year. The self-employed man would get his contribution card, and when the scheme started in July he would have to stamp that card each week. That weekly stamp was his contribution to the scheme. The Class 2 contributions were 6s. 2d. for a man and 5s. 1d. for a woman each week. Now what would the self-employed man or woman get in return for these contributions? The bare list was: sickness benefit, maternity benefit for his wife, benefit for his widow if he died, guardian's allowance for his children if both parents died, retirement pension in old age, and death grant to help with the funeral expenses. The right to benefit of course depended on his having fulfilled the contribution conditions for each benefit.

Award for B.C.G. Research

Dr. Joseph Aronson, of the U.S. Bureau of Indian Affairs, has been awarded the Alvarenga prize by the College of Physicians of Philadelphia for his studies on the evaluation of B.C.G. vaccine in the control of tuberculosis. Pedro Francisco da Costa Alvarenga, of Lisbon, an associate fellow of the College, made arrangements in his will for the prize "to be awarded annually by the College of Physicians on each anniversary of the death of the testator, July 14, 1883."

Fuel Allowance for Tuberculous

The Joint Tuberculosis Council has adopted a resolution asking the Minister of Health to reconsider as a matter of urgency the fuel allowance for the families of tuberculous persons in view of the steep rise in fuel prices since the original scale was fixed.

Supply of Penicillin

Until recently about 40% of the penicillin produced in this country was exported, but owing to the fact that complaints of shortages have been received exports are now restricted to 30% of production. The amount of penicillin manufactured continues to increase, and was in August 409,000 mega units, as compared with 344,000 in March. Owing to the increasing demand for larger vials, distributors of penicillin have found difficulty in complying with orders from hospitals, and the Ministry of Health requests, therefore, that if only the smaller sizes are available they should be used. Only a small proportion of the penicillin being produced at the moment is white (or crystalline), and, since it is much more expensive than the yellow variety, the Ministry suggests that it should be reserved for intrathecal, ventricular, and subconjunctival administration.

Storage of Penicillin

The useful life of dry penicillin will probably exceed the expiry date shown on the package if the instructions for storage are complied with. Solutions should be kept in a refrigerator. It is destroyed by acids and alkalis; by metals such as zinc, lead, copper, and aluminium. It is inactivated by the primary alcohols, and by oxidizing agents such as hydrogen peroxide and potassium permanganate. Prolonged boiling destroys it, but it is not affected by heating to 60° or 70° C. for several minutes.

Bristol's Old People

A conference on the care of old people, arranged by the Bristol and District Divisional Hospitals Council and the Bristol Council of Social Service, was held at Bristol University on Oct. 29. It was resolved that the Council of Social Service should investigate the conditions under which the aged and infirm are living in the city, and what might be done to improve them, and that the Divisional Hospitals Council should discuss with the University the possibility of their undertaking a survey to measure the size of the problem.

International Pharmacopoeia

Arrangements for an international pharmacopoeia have been made at a Geneva meeting of the World Health Organization of the United Nations, states Dr. C. H. Hampshire, secretary of the Pharmacopoeia Commission.

Inquiry into Hospital

The Minister of Health has appointed Mr. V. Zachary Cope and Miss M. F. Dykes, S.R.N., to hear the appeal announced in Parliament and reported in this *Journal* on Nov. 8 (p. 752) by the London County Council against the decision of the General Nursing Council to withdraw recognition of St. Leonard's Hospital, Shoreditch, as a nurses' training school. The appeal will be heard on Nov. 18 at the Ministry of Health.

Public Health in Russia

The public health authorities in Moscow claim that prophylactic measures have rendered typhus extremely rare and smallpox non-existent in Russia. A network of air-ambulance services is being extended even to remote villages, and special attention is being given to the public health problems found in rural districts.

Wills

Dr. John Thomson MacCurdy, lecturer in psychopathology in the University of Cambridge, left £30,557. Dr. Henry Litherland, formerly of Wigan, left £4,249. Dr. Harold Edwards Flint, for many years a C.M.S. medical missionary, left £54,410. Dr. James Harrison, of North Shields, an alderman of the Tynemouth Council, left £36,968. Dr. Edgar Alfred Field, for many years in practice in Darwen, Lancs, left £494. Dr. Henry Carter, late of Ripon, left £69,997.

COMING EVENTS

Ernest Jones Lecture

The British Psycho-Analytical Society invites all members of the medical profession to attend the annual Ernest Jones lecture entitled "Science and Belief" which will be given by kind permission of the Royal Society of Medicine in the Barnes Hall at 1, Wimpole Street, London, W., on Wednesday, Nov. 19, at 8 p.m., by Prof. C. H. Waddington, F.R.S.

London Association of M.W.F.

The annual general meeting of the London Association of the Medical Women's Federation will be held at the Royal Free Hospital School of Medicine, 8, Hunter Street, London, W.C., to-day (Saturday, Nov. 15), at 3 p.m.

Royal Microscopical Society

A meeting of the Royal Microscopical Society, which will be devoted to communications on "Electron Microscope Studies of Tissues from High- and Low-breast Cancer Strains of Mice," will be held at B.M.A. House, Tavistock Square, London, W.C., on Wednesday, Nov. 19, at 5 p.m. for 5.30 p.m. Prof. R. D. Passey, M.D., will present a general introduction to the subject and will be followed by Dr. L. Dmochowski, Prof. W. T. Astbury, Sc.D., F.R.S., and Dr. R. Reed.

Radiological Meetings in London

A meeting of the Therapy Section of the Faculty of Radiologists will be held at the Royal College of Surgeons of England (Lincoln's Inn Fields, London, W.C.) on Friday, Nov. 21, at 2.15 p.m., when there will be a discussion on "Carcinoma of the Vulva," to be opened by Prof. E. Berven (Stockholm), Miss M C. Tod, and Dr. Frank Ellis. The Radiological Section of the Royal Society of Medicine will meet at 1, Wimpole Street, London, W., on the same day at 8.30 p.m., when Prof. Berven will discuss "Methods and Results in the Radiological Treatment of Malignant Tumours in the Radiumhemmet, Stockholm."

Royal Sanitary Institute

A sessional meeting of the Royal Sanitary Institute will be held at Dewsbury Town Hall on Saturday, Nov. 22, at 10.15 a.m., when Dr. E. D. Irvine will read a paper on "The Local Authority and the Promotion of Health."

Middlesex County Medical Society

The next general meeting of the Middlesex County Medical Society will be held at the Royal National Orthopaedic Hospital, Stanmore, on Friday, Nov. 28, when there will be visits to the hospital school, cripples' workshops, and a demonstration of physiotherapeutic apparatus. Short papers will be read by Mr. John A. Cholmeley, medical superintendent of the Hospital's Country Branch, on "The Management of Anterior Poliomyelitis—Early and Late," and by Dr. J. O. F. Davies on "Epidemiology of Anterior Poliomyelitis."

SOCIETIES AND LECTURES

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.—Tuesday, Nov. 18, and Thursday, Nov. 20, 5 p.m. Croonian Lectures by Dr. E. R. Boland: The Administration of Medicine.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C.—Friday, Nov. 21, 5 p.m. Thomas Vicary Lecture by Dr. I. Harvey Flack: Lawson Tait.

ROYAL SOCIETY OF MEDICINE

General Meeting of Fellows.—Tuesday, Nov. 18, 5.30 p.m. Ballot for election to the Fellowship.

Section of Pathology.—Tuesday, Nov. 18, 8 for 8.30 p.m. Laboratory Meeting at the Royal Army Medical College, Johnslip Street, Millbank, S.W.—Demonstrations by Lieutenant-Colonel J. T. L. Archer: 1. Typhoid Vi Phage; 2. Action of Polyvalent Dysentery Phage Correlated with Agglutination Tests as a Diagnostic State; 3. Preservation of Phage by Chemical Agents. Major A. C. Cunliffe: Plate Methods of Demonstrating Bacterial Proteolysis. Lieutenant-Colonel J. A. Manifold: Tropical Anaemias. Lieutenant-Colonel E. W. Hall: The Manufacture of Alcoholized T.A.B. Vaccines. Major K. B. Rogers: An Explanation of Some Discrepancies in "Sedimentation Rates." Major G. B. S. Roberts: Cerebral Tumours and Brain Injuries. Mr. Leach: Malaria Demonstration, Helminthology Demonstration, Visual Aids in Teaching. Major A. R. T. Lundie: "Quiz." Mr. J. H. Grundy: Arthropoda and Other Animals of Medical Importance and Visual Aids in Entomological Teaching.

Section of Dermatology.—Thursday, Nov. 20, 5 p.m. (Cases at 4 p.m.)

Section of Obstetrics.—Friday, Nov. 21, 8 p.m. Short Paper by Prof. James Miller and Prof. Chassar Moir: A Note on the Centenary of the Use of Anaesthesia in Obstetric Practice by J. Y. Simpson. Communications by Dr. J. Dumoulin: Cervical Proliferation in Pregnancy Resembling Carcinoma; Dr. Magnus Haines: Pregnancy and Adenomyoma; Mr. Ian Jackson: Two Cases of Carcinoma of the Bartholin's Glands; Dr. D. Jefferies: A Practical Problem in the Differential Diagnosis of Endometriosis; Dr. T. L. T. Lewis: Pregnancy and Colostomy; Dr. D. S. Matthews: Case of Intestinal Obstruction in Pregnancy; Dr. P. Mitchell: Case of Fibroma and Granulosa-cell Tumours Occurring in the Same Ovary; Mr. John Thurston: A Bacteriological Symphony; and Dr. S. H. Riterband: Unusual Case of Dermoid Cyst in Puerperium.

Section of Radiology.—Friday, Nov. 21, 8.30 p.m. Paper by Dr. Elis Berven (Stockholm): Methods and Results in the Radiological Treatment of Malignant Tumours in Radiumhemmet.

BRISTOL UNIVERSITY.—At Large Physics Lecture Theatre (Royal Fort), Bristol University, Tuesday, Nov. 18, 8.15 p.m. XXXVI Long Fox Memorial Lecture by Prof. G. Hadfield: Subacute Bacterial Endocarditis. Admission to the lecture is free.

BRITISH INSTITUTE OF PHILOSOPHY.—At Eugenics Theatre, University College, Gower Street, London, W.C., Friday, Nov. 21, 7.30 p.m. Prof. E. A. Milne: The Present Outlook in the Astronomical Universe.

EUGENICS SOCIETY.—At Royal Society's Rooms, Burlington House, Piccadilly, London, W., Tuesday, Nov. 18, 5.30 p.m. G. C. L. Bertram, M.A., Ph.D.: Eugenics, Population Trends, and the World's Resources.

HUNTERIAN SOCIETY.—At Apothecaries' Hall, Black Friars Lane, Queen Victoria Street, London, E.C., Monday, Nov. 17, 8.30 p.m. Motion: That Our Present Diet is Undermining the Health of the Nation. Proposed by Drs. Franklin Bicknell and Kenneth McFadyean; opposed by Sir Jack Drummond and Mr. Magnus Pyke.

INSTITUTE OF DERMATOLOGY, 5, Lisle Street, Leicester Square, London, W.C.—Tuesday, Nov. 18, 5 p.m. Dr. M. Sydney Thomson: Parasitic Affections—Animal and Vegetable. Wednesday, Nov. 19, 5 p.m. Dr. C. W. McKenny: *X*-ray Technique.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.—At Leeds General Infirmary, Friday, Nov. 21, 8.30 p.m. Prof. H. J. Seddon: A History of Scrofula.

LONDON: UNIVERSITY COLLEGE, Gower Street, W.C.—Tuesday, Nov. 18, 5.15 p.m. Dr. Bernard Katz: Transmission of Impulses from Nerve to Muscle.

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28, Portland Place, W.—Wednesday, Nov. 19, 3.30 p.m. Mr. L. Z. Cosin: Modern Methods in the Care of the Aged (illustrated).

ROYAL MEDICAL SOCIETY, 7, Melbourne Place, Edinburgh.—Friday, Nov. 21, 8 p.m. Dissertation by Mr. C W. M. Wilson: Ancient and Modern Views on Water Metabolism.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.—At London School of Hygiene and Tropical Medicine, Keppel Street, W., Thursday, Nov. 20, 7.30 p.m. Laboratory meeting: Demonstrations.

POSTGRADUATE DIARY

EDINBURGH ROYAL INFIRMARY.—Thursday, Nov. 20, 4.30 p.m. Honyman Gillespie Lecture by Mr. J. N. J. Hartley: The Story of a Museum

INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330-332, Gray's Inn Road, London, W.C.—Tuesday, Nov. 18, 2.15 p.m. Dr. E. H. R. Harries: Respiratory Tract in Infectious Diseases.

LONDON CHEST HOSPITAL, Victoria Park, E.—Friday, Nov. 21, 5 p.m. Mr. V. C. Thompson: Mediastinal Tumours.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS, 58, Queen Anne Street, W.—Monday, Nov. 17, 5 p.m., Dr. K. V. Bailey, Treatment of Prolapse in the Child-bearing Age; Tuesday, Nov. 18, 5 p.m., Prof. R. J. Keliar, Toxaemia of Pregnancy; Wednesday, Nov. 19, 5 p.m., Mr. C. D. Read, Choice of Treatment in Carcinoma of the Cervix; Thursday, Nov. 20, 5 p.m., Prof. H. L. Sheehan, Pathology of Obstetric Shock; Friday, Nov. 21, 5 p.m., Dr. G. Marshall, Survey of Pregnancy Associated with Pulmonary Tuberculosis. Admission to lectures by ticket only. Fees: Five lectures, £2 2s.; single lecture, 10s. 6d.

APPOINTMENTS

Dr. D. Campbell has been elected vice-chairman of the St. Helens Executive Council and, for the thirteenth consecutive year, chairman of the St. Helens (National Health) Insurance Committee.

CANT, WILLIAM H. P., M.B., B.S., M.R.C.P., Physician to Out-patients, Children's Hospital, Birmingham.

CONNOLLY, EUGENE V., M.B., B.Ch., D.P.H., D.C.H., Medical Officer of Health, Borough of Oldbury, Worcestershire.

LONDON COUNTY COUNCIL.—The following appointments have been made in the Council's mental health services at the hospitals indicated in parentheses: *Senior Registrars*, F. Kraupl, M.D., D.P.M., and J. H. Rey, M.B., B.S. (Maudsley); *Assistant Pathologist*, C. K. McDonald, M.B., Ch.B., D.P.H. (Epsom Pathological Laboratory); *Assistant Physician*, F. Post, M.B., B.S., M.R.C.P., D.P.M. (Maudsley). The following appointments have been made in the London School Health Service: *Assistant Medical Officer*, C. B. Grimaldi, B.M., B.Ch.; *Part-time Consultant Psychiatrist*, W. Lindesay Neustatter, M.D., M.R.C.P.

MIDDLESEX HOSPITAL, W.—*Professorial Medical Unit: First Assistant*, J. W. Paulley, M.D., M.R.C.P.; *Second Assistant*, R. Semple, M.B., Ch.B., M.R.C.P. *Professorial Surgical Unit: First Assistant*, R. S. Lawrie, M.D., F.R.C.S.; *Second Assistant*, L. P. Le Quesne, B.M., B.Ch., F.R.C.S. *Senior Assistant to Department of Thoracic Surgery*, G. C. L. Pile, M.S., F.R.C.S.

PHILPS, A. SEYMOUR, F.R.C.S., Assistant Ophthalmic Surgeon, St. Bartholomew's Hospital, London, E.C.

ROTH, M., M.D., M.R.C.P., Senior Psychiatrist, Crichton Royal Mental Hospital, Dumfries.

WHELTON, W. F., M.Ch., N.U.I., F.R.C.S.Ed., Honorary Surgeon to Extern Department, North Infirmary, Cork.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

DERRETT.—On Oct. 16, 1947, at Fernwood House, to Pearl (*née* Penrith), M.B., B.S., wife of Rev. L. J. Derrett, a son.

GERRIE.—On Nov. 2, 1947, at Rubislaw Nursing Home, Aberdeen, to Mr. and Mrs. John Gerrie, twins—a son and daughter.

MCGOWAN.—On Nov. 4, 1947, at St. Brenda's Nursing Home, Bristol, to Dr. Rosalind S. McGowan (*née* Barclay), wife of Dr. G. K. McGowan, a daughter.

MARRIAGE

DENT—TEMPLETON.—On Nov. 1, 1947, at Aberdeen, Ronald V. Dent, M.B., M.R.C.P., to Mary A. Templeton, M.B.

DEATHS

BARNES.—On Nov. 1, 1947, at Greencroft, Colyton, Devon, Henry John Barnes, M.R.C.S., Lieutenant-Colonel, R.A.M.C. (retired).

BIRKETT.—On Oct. 28, 1947, at The Ghyll, Grange-over-Sands, George Thomas Birkett, L.R.C.P., L.R.C.S.Ed.

BRAMWELL.—On Oct. 30, 1947, at Richmond, Yorkshire, Dan Cunningham Byrom Bramwell, M.B., Ch.B., aged 30.

BURGHARD.—On Oct. 31, 1947, at 7, Causewayside, Cambridge, Frédéric François Burghard, C.B., M.D., F.R.C.S., Colonel, R.A.M.C., aged 83.

DOWDING.—On Nov. 7, 1947, at 17, Wessex Gardens, London, N.W., Ernest Frederick Charles Dowding, M.R.C.S., late Major, R.A.M.C., aged 73.

DURRANT.—On Oct. 30, 1947, at Walmer, Norbert Sidney Durrant, L.R.C.P.&S.I.

GOBLE.—On Nov. 1, 1947, at Chidham Cottage, Hayling Island, Frederick George Goble, M.R.C.S., L.R.C.P., Surgeon-Captain, R.N. (retired).

GREEN.—On Oct. 31, 1947, Edgar Francis Stephen Green, M.B., Ch.B.

GREGORY.—On Oct. 31, 1947, at Woodleigh, Bramhall, Cheshire, Arnold Gregory, M.R.C.S., L.R.C.P., aged 68.

HAIG.—On Nov. 2, 1947, at Crieff, William Haig, T.D., D.S.O., M.B., C.M.

HOWKINS.—On Oct. 30, 1947, Cyril Henry Howkins, C.B.E., D.S.O., M.R.C.S., L.R.C.P.

HUNTER.—On Nov. 7, 1947, at Thirladene, Bridge of Allan, Walter King Hunter, M.D., D.Sc., LL.D., Emeritus Professor of Medicine, Glasgow University.

KAUNTZE.—On Nov. 4, 1947, at Woking, William Henry Kauntze, C.M.G., M.B.E., M.D., F.R.C.P.

MCCULLOCH.—On Oct. 26, 1947, at South Park, Hexham, Colin McCulloch, L.R.C.P., L.R.C.S.Ed., L.R.F.P.S.Glas.

MALLETT.—On Oct. 29, 1947, at The Gables, Minchinhampton, Stroud, Glos., Sir Frederic Rowland Mallett, M.D., aged 78.

NEWTON.—On Oct. 29, 1947, at South Broomhill, Morpeth, Duncan Gray Newton, F.R.C.S.Ed.

ROBERTS.—On Nov. 7, 1947, at 28, Radnor Park Road, Folkestone, Hugh Treharne Llewellyn Roberts, L.R.C.P., L.R.C.S.Ed., aged 80.

STRICKLAND.—On Nov. 3, 1947, at Roqueville, Mont Cantel, St. Helier, Jersey, Cyril Strickland, M.D., aged 66.

VOST.—On Nov. 2, 1947, at 22, Manor Way, South Croydon, William Vost, M.B., C.M., Lieutenant-Colonel, I.M.S. (retired).

WHITE.—On Nov. 9, 1947, John Richard White, L.R.C.P., L.R.C.S.Ed., aged 81.

WILLIAMS.—On Oct. 29, 1947, at Mount Auburn, Killiney, Herbert Armstrong Williams, D.S.O., M.B., B.Ch., Lieutenant-Colonel, I.M.S. (retired).

YOUNG.—On Nov. 5. 1947, at Edinburgh, William Allan Young, D.S.O., M.D.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Prevention of Colds

Q.—*Patients often ask about the efficacy of inoculations to prevent colds. Can you recommend any preparation suitable for administration to a number of people?*

A.—Various controlled trials in the use of "anti-catarrhal" stock bacterial vaccines for the prevention of the common cold have shown that such vaccines are not to be relied on as a prophylactic measure. It is now generally accepted that the common cold is due to a virus or a number of viruses, and a bacterial vaccine containing organisms like the pneumococcus, streptococcus, and influenza bacillus could obviously not prevent the primary attack. Whether such a vaccine could prevent or modify secondary bacterial infection due to these organisms is also debatable, since there is great variety in the types of pneumococcus and streptococcus which might be involved. However, practitioners claim that they have seen good effects from the prophylactic use of anti-catarrhal vaccines which are available from a number of commercial firms.

Aspirin and Cerebral Congestion

Q.—*Is there any evidence to show that aspirin and related drugs may increase cerebral congestion? Has any simple correlation been established between increased intracranial and intraocular tension, and is there any known correlation between variations of these pressures and changes in barometric pressure, as a matter of normal physiology?*

A.—Aspirin and related drugs do not increase cerebral congestion. There is no simple correlation between intracranial and intraocular tension, nor is there any known connexion between barometric and intracranial pressures.

Mortality Statistics of Pneumonia

Q.—*Could you either give me statistics showing the mortality from lobar pneumonia and bronchopneumonia in children under 12 years before and after the introduction of antibiotics, or let me know where I might obtain such information?*

A.—Mortality statistics are published in quinquennial age groups, and it is not possible to obtain figures for children under 12 years of age. Deaths from lobar pneumonia and bronchopneumonia in the following age groups—under 1, 1–5, 5–10, 10–15, etc.—are published in Table 21 of the Registrar-General's *Statistical Review*. The continuity of these statistics has been broken by a change in classification in 1940, when, in the case of multiple causes of death, the physician's choice was accepted in place of set procedure. The Registrar-General has given a factor to convert to the recent classification.

Mixed Feeding for Babies

Q.—*Is it now considered wise to introduce patent cereals, scraped carrot, sieved vegetables, and purées, including prune purée, with visible roughage, into National dried milk or other milk foods for babies under 8 months? Unchanged particles of these extra foods can be recognized in the stools of babies, who are often restless and sleep badly.*

A.—Mixed feeding can safely be started long before 8 months of age; some authorities suggest about 4 months, and certainly most of the items mentioned could be started at 6 months. They should not be put "into" the milk feeds used (except cereals made with milk) but gradually utilized as steps towards a full mixed diet. The stools will, of course, change in character when articles other than milk are given, and cellulose material will appear more or less unchanged. But this is a normal state of affairs, and possibly teething is a more likely explanation for the restlessness and poor sleep of babies at this age.

Trilene in Obstetrics

Q.—*What are the latest views on trilene in obstetrical practice?*

A.—Trilene administered with a well-constructed inhaler gives very satisfactory results as an analgesic in obstetrical practice. It must, however, be administered under the supervision of a medical practitioner; midwives are not allowed to use it on their own. The inhaler, of which there are now several patterns, limits the strength of trilene vapour inhaled, so that no more than analgesia is produced. Trilene should never be used in a carbon-dioxide absorber, for in the presence of alkali very toxic breakdown products may be formed. The simple inhalers used for obstetric analgesia do not employ soda lime and therefore this danger does not exist.

Removal of Superfluous Hair

Q.—*What would you recommend to young women for removing hairs on the chin and upper lip? Are there improvements on electrolysis, removal by wax, or simply pulling them out? If removed by electrolysis do the hairs recur? If hairs are repeatedly pulled out, do they become stiff and short like a man's beard? Is the belief fallacious that the pulling out of hairs causes an increased number to grow?*

A.—If the patient does not approve of the electric razor, which is probably the best treatment, the other measures enumerated are satisfactory. None of these measures increases the number or calibre of the hairs. There is no new treatment for simple hirsuties.

D.D.T. as an Anthelmintic

Q.—*The usual anthelmintics (santonin, diphenan, and gentian violet) do not always cure and are valueless in preventing reinfection. It occurred to me that in the latter case D.D.T. might be more satisfactory than smearing the anus with ointments—if the theory is correct that the female worm emerges at night to lay eggs. The worm is certainly susceptible to D.D.T., as I proved by exposing a faecal mass swarming with worms to D.D.T. solution: all were killed. I suggest powdering the anal fold at night with D.D.T., which I have carried out without any irritant effect on the skin. The next step is obviously the internal use of D.D.T., but I hesitate to carry this out experimentally in children. Are there any findings available regarding the toxicity of D.D.T.? Has it been used for this purpose, and, if so, what dosage is recommended?*

A.—The questioner does not state what parasite he is attempting to eradicate, but it seems likely that *Enterobius vermicularis* is concerned. There do not appear to be any data regarding the toxicity of D.D.T. to nematodes. One would hesitate to conclude that powdered D.D.T. was toxic to worms because they were killed by a solution of the chemical, unless it had been shown that the solvent itself was innocuous. Certainly by analogy with insecticidal work D.D.T. is unlikely to affect the eggs. Powdering the anal fold with D.D.T., suitably diluted, is unlikely to be harmful, though perhaps of doubtful efficacy. D.D.T. should not be used internally. A good review of the toxicity of D.D.T., by F. M. G. Stammers and F. G. S. Whitfield, will be found in the *Bulletin of Entomological Research* (1947, **38**, 1).

Food Value of Gelatin

Q.—*Am I right in thinking that gelatin, though absorbed, has no food value, and that consequently bone broth is not nutritious?*

A.—Gelatin, a degradation product of the animal protein collage, is inadequate by itself as a source of the nine or ten amino-acids essential for the normal nitrogen metabolism of man and other animals. It can, however, exercise a "sparing" action on the use of biologically adequate protein, for it is a fair source of arginine and lysine, besides being rich in certain non-essential amino-acids—namely, glycine, proline, and oxyproline. Its content of essential amino-acids, moreover, is such that it can show "supplementary" action with certain vegetable proteins also not able by themselves to satisfy nitrogen requirements.

Onychia

Q.—*In a case of onychia, removal of the finger-nail with antiseptic treatment of the nail-bed and several courses of x-ray therapy has been ineffective. What further treatment do you suggest?*

A.—It is presumed that coccal or monilial or ringworm infection of nail, nail-bed, and perionychial spaces is implied by this question. A general overhaul of the patient and of his skin for other sites of disease or infection may be fruitful. For coccal infections general treatment with penicillin and sulphonamides is indicated, and locally dry heat, short-wave diathermy, or fractional doses (120 r.) of unfiltered *x* rays and painting with spirituous solutions of the dyes. Lotions, ointments, and water should be avoided. For fungous disease removal of the nail and subsequent irradiation with unfiltered *x* rays in fractional dosage at monthly intervals offers most hope, provided there is continuous treatment with effective fungicides. Alternating the following in weekly periods is suggested:

℞ Ung. dithranol. *B.P.*
℞ Ung. iodi denigrescens *B.P.*
℞

Benzoic acid	24 gr. (1.6 g.)
Salicylic acid	30 gr. (2 g.)
Soft paraffin	1 dr. (4 g.)
Coconut oil	to 1 oz. (31 g.)

Make into an ointment

℞

Mercury perchloride	1/2 %
Brilliant green	1/2 %
Industrial spirit	to 100%

Make into a paint

Loss of Finger

Q.—*A man aged 25, a handyman-mechanic, recently had the distal and middle phalanges of the middle finger of the right hand removed at operation. He has a satisfactory stump with good movement. The other fingers are normal. What is his disability, and is he entitled to claim workmen's compensation? Could you recommend a book dealing with this subject?*

A.—Loss of the middle and distal phalanges of the right middle finger would constitute a permanent partial disability of the order of approximately 5 to 8% as compared with a normal working man. Disability would be increased by undue tenderness of the stump or by its "getting in his way" at work. If the loss was sustained as the result of an accident occurring in the course of his work he should be entitled to a claim for workmen's compensation. An authoritative account of industrial medicine, disability, and compensation is contained in *Occupational Diseases*, by R. T. Johnstone (W. B. Saunders Company).

Resection of Small Intestine

Q.—*What is the present surgical opinion as to the largest amount of small intestine that can safely be removed, leaving reasonably normal digestive and absorptive functions? What is the best diet once the patient has got over the operation?*

A.—Without knowing more details of the particular operation it is not easy to answer this question categorically. Most surgeons would probably agree that the loss of more than 10 to 12 feet (3 to 3.6 m.) of small intestine makes a reasonable post-operative metabolic life difficult; but this statement must be qualified to some extent by the portion of small gut concerned, massive excisions of jejunum being more detrimental than those of ileum. During the war a number of cases were reported where greater lengths than those quoted above were removed and the patient survived. The problem of feeding in such cases is undoubtedly a difficult one; they are relatively so few in number that it cannot be said any general agreement has been reached on the quantity of or form in which amino-acids, predigested fats, and vitamins (all of which are necessary) should be supplied. Some help may be obtained from a recent article by H. W. Meyer on "Recovery Following Extensive Resection of Small and Large Intestine" (*Arch. Surg.*, 1946, **53**, 298).

NOTES AND COMMENTS

Bates on Better Eyesight.—Dr. RONALD KERR (London, N.W.) writes: As one who has in the past made a serious effort to practise Bates's eye treatment, may I comment on the answer on this subject (Nov. 1, p. 717)? I agree entirely that it is not possible to alter refractive errors in adults. In cases of the larger errors with defective vision, Bates's treatment often enables patients to see better without their glasses than they did before, but normal vision is not attained, and the improvement is presumably due to an increased ability to interpret blurred images, and is not due to any decrease in the refractive error. Though Bates's claim is quite untenable, that once "strain is relieved" refractive errors disappear, nevertheless he did produce something of value, and that is the idea that there is a right and a wrong way of using the eyes. The right way of looking, according to Bates, is (1) to avoid making effort, peering, staring, and straining to see; (2) to pay attention only to that part of the image which falls on the macula; and (3), which is a corollary of (2), to shift the attention rapidly about from point to point of the object regarded.

Lack of space forbids further discussion of this idea, but I should like to record that I believe it is physiologically sound, that bad habits of staring, not blinking, and not "shifting" can and do produce symptoms of ocular discomfort, and that the benefit which patients often get from being taught good habits is not entirely due to suggestion. In cases where patients complain of discomfort rather than defective vision there appear to be three factors concerned: (1) the refractive error; (2) the presence or absence of adequate convergence power; (3) the way in which the eyes are used. Oculists have paid much attention to refractive errors, and are now beginning to realize the importance of convergence deficiency. They have not yet recognized the existence of bad habits. In these cases, treatment of convergence and/or the inculcation of good habits usually relieve the symptoms completely. The small refractive error remains, but by itself produces no symptoms, and can be ignored. These are the cases in which the Bates practitioners get their undoubted successes. Patients are enabled, without recurrence of symptoms, to discard the glasses which have been unnecessarily prescribed by those who are not familiar with the alternative treatment.

In cases of presbyopia and moderate degrees of hypermetropia the need for glasses can be postponed by compelling the ciliary muscle to go on working. If the convergence is good and the habits right, it can be done without undue symptoms with the aid of some of the Bates "exercises." Whether it is worth the effort is another matter, but to show what can be done I will cite the case of a Bates practitioner whom I have refracted. She has no appreciable error, and at the age of 60 has never had glasses. She can read ordinary print comfortably in a good light, and in fact reads a great deal, though poor print in a poor light defeats her.

Confidence Trick.—A consultant in Liverpool received a letter from a Mr. Andrew M. Hadjipavlis, of Famagusta, Cyprus, who asked a number of questions about a patient said to have syphilis. The consultant replied that he could give no advice on a patient whom he had not seen and who was under the care of another doctor. He quite properly went on to make some general remarks about the treatment of syphilis. He then received a letter from Mr. Hadjipavlis, who apologized for not informing the consultant in the first place that he was "a Press Correspondent, and that there was no any patient in reality." Mr. Hadjipavlis said that although the consultant's letter was very brief there was something in it which he might use in his papers. "My intention," he added, "was to run a campaign in the local and Middle East newspapers toward the treatment which is being carried out by Government Hospitals." We are indebted to the consultant in question and to the Medical Defence Union for allowing us to put these details on record so that they may serve as a warning to other practitioners.

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology, Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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